

GNB

GRAY NOTEBOOK



Washington State
Department of Transportation

Quarterly performance analysis of WSDOT's multimodal systems and programs

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DRIVING THE POINT HOME

ANALYZING WSDOT'S HIGHWAY SYSTEM SAFETY PROGRAMS

Getting across

Maintaining the state's extensive bridge network

You shall pass

WSDOT working to remove barriers for fish statewide

Finding balance

The benefits of WSDOT becoming a more inclusive agency

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PERFORMANCE HIGHLIGHTS reported for the quarter ending June 30, 2018

565

highway fatalities occurred in Washington in 2017, marking a 5.4% increase from the 536 fatalities in 2016

92.5% OF WSDOT BRIDGES BY DECK AREA



were in FAIR or BETTER condition as of June 2018

10.2 PERCENT

increase in waterborne freight shipment tonnage from 2015 to 2016

2,340 HOURS

of WSDOT staff time saved by General Hydraulic Project Approvals in 2017

41 percent

of the 307,953 hours worked by apprentices on WSDOT projects in 2017 were completed by women and minorities

\$23.5 MILLION

in economic benefit provided by WSDOT's Incident Response teams clearing 15,033 incidents during the quarter

Construction projects completed with Nickel or Transportation Partnership Account funds

380

WSDOT CORRECTED

14 FISH PASSAGE BARRIERS

IN 2017, IMPROVING ACCESS TO 45.5 MILES

OF UPSTREAM HABITAT



70 WSDOT'S STRATEGIC PLAN

New strategic plan under development

WSDOT's strategic plan continues undergoing a bit of a facelift. Formerly known as Results WSDOT, from 2014-2017 it featured six goals; three agency emphasis areas were added as strategies in 2016. These emphasis areas—Inclusion, Practical Solutions and Workforce Development—have become the new plan's goals. The name of the plan has changed—it is now WSDOT's Strategic Plan. The plan continues to focus on how the agency makes investments and delivers projects within limited resources.

Under the new strategic plan, WSDOT's Inclusion efforts ensure we engage the agency's employees, communities and partners as we collaboratively deliver the program. Practical Solutions allows WSDOT to leverage finite funding to get the most capacity and safety out of the entire multimodal transportation system. WSDOT's focus on Workforce Development ensures that the agency attracts and retains a quality workforce to meet its legislative, regulatory, service and public expectations.

The strategic plan's goal teams are busy developing strategies and work plans, which will define the actions and deliverables needed to achieve the agency's goals. Articles in this issue, indicated by a box with a goal name, show how these goals are being realized. A strategic plan dashboard is under development; look for it in upcoming issues of the Gray Notebook. A web-based version of the dashboard is also in the works.

In addition to three goals, the strategic plan features a vision, mission and values. WSDOT's vision, defined as where the agency wants to go, is "Washington travelers have a safe, sustainable and integrated multimodal transportation system." Results WSDOT's mission is a statement about the agency's core purpose, "We provide safe, reliable and cost-effective transportation options to improve communities and economic vitality for people and businesses."

Results WSDOT features six values, defined as "how we do business" or statements of guiding principles. The values are: safety, engagement, innovation, integrity, leadership and sustainability.

Recent editions of the Gray Notebook have featured articles on Workforce Development and Inclusion efforts at WSDOT. See [pp. 40-43](#) in this edition for the Inclusion Annual Report and [Gray Notebook 69, pp. 31-34](#) for the Workforce Development Annual Report.



Inclusion Goal

Strengthen commitment to diversity and engagement in all of WSDOT's business processes, functions and services to ensure every voice is heard.



Practical Solutions Goal

Prioritize innovative, timely and cost-effective decisions, with our partners, to operate, maintain, plan and build our multimodal transportation system.



Workforce Development Goal

Be an employer of choice, creating a modern workforce while attracting and retaining quality workers to deliver our legislative, regulatory, and service requirements.

70 RESULTS WASHINGTON DASHBOARD

Results Washington, the state's performance management system, outlines Gov. Jay Inslee's priorities. This strategic framework sets the state's vision and mission, as well as the expectation that state agencies will achieve goals collaboratively. For more information, visit <http://www.results.wa.gov/>.

Results Washington Measures by goal ¹	Previous period	Current period	On target ²	Current trend	Desired trend
Annual Measure for which WSDOT is the lead agency					
Goal 2: Prosperous Economy					
Control the percent of National Highway System bridges, state and locally owned, in poor condition from increasing over 10% by 2020 (FY2017 & FY2018)	8.6%	7.4%	Yes	↓	↓
Control the percent of National Highway System pavement, state and locally owned, in poor condition from increasing over 10% by 2020 (2015 & 2016)	6.7%	7.4%	Yes	↑	↓
Control the percent of ferry terminal systems (by value) that are past due for replacement from increasing over 6% by 2020 (FY2016 & FY2017)	5.4%	6.0%	Yes	↓	↓
Control the percent of ferry vessel systems (by value) that are past due for replacement from increasing over 10% by 2020 (FY2016 & FY2017)	10.9%	13.1%	No	↑	↓
Maintain percentage of transit fleet that exceeds the Federal Transit Administration's minimum useful life at 25% or below through 2020 (2015 & 2016)	34.6% ³	40.2%	No	↑	↓
Increase the percentage of Washingtonians using alternative transportation commute methods to 29% by 2020 (2015 & 2016)	27.6%	27.9%	No	↑	↑
Ensure travel and freight reliability on strategic corridors does not deteriorate more than 5% through 2020 ⁴ (2015 & 2016)	5.0% ⁵	5.7%	No	↑	↓
Operate strategic corridors at 90% efficiency or higher through 2020 (2015 & 2016)	93.4%	94.0%	Yes	↑	↑
Reduce the number of pedestrian and bicyclist fatalities on public roadways from 87 in 2012 to zero in 2030 (2016 & 2017)	105	122	No	↑	↓
Annual measures for which WSDOT is not the lead agency, but has an interest include:					
Goal 2: Prosperous Economy					
Increase state agency and educational institution utilization of state certified small businesses in public works and other contracting and procurement by 2017 to: Minority owned businesses, 10%; Women owned businesses, 6%; Veteran owned businesses, 5% ⁵ (FY2017)	Minority-owned: 2.76% ⁵ Women-owned: 2.29% ⁵ Veteran-owned: 0.49% ⁵		No	N/A	↑
Goal 3: Sustainable Energy and a Clean Environment					
Reduce transportation related greenhouse gas emissions from 44.9 million metric tons/year (projected 2020) to 37.5 million metric tons/year (1990) by 2020 (2014 & 2015)	41.2	44.0	No	↑	↓
Reduce the average emissions of greenhouse gases for each vehicle mile traveled in Washington by 25% from 1.15 pounds in 2010 to 0.85 pounds by 2020 (2014 & 2015)	1.13	1.13	No	↔	↓
Increase the average miles traveled per gallon of fuel for Washington's overall passenger and light duty truck fleet (private and public) from 19.2 mpg in 2010 to 23 mpg in 2020 (2015 & 2016)	21.0	21.5	Yes	↑	↑
Increase the number of plug-in electric vehicles registered in Washington from approximately 8,000 in 2013 to 50,000 by 2020 (2016 & 2017)	17,941	27,858	No	↑	↑
Increase miles of stream habitat opened from 55 miles per year in 2017 to 80 by 2020 ^{5,6} (2017)	N/A	55	N/A	N/A	↑
Increase number of fish passage barriers corrected per year from 60 in 2017 to 90 by 2020 ^{5,6} (2017)	N/A	60	N/A	N/A	↑
Goal 4: Healthy and Safe Communities					
Decrease number of traffic-related fatalities on all roads from 454 in 2011 to zero in 2030 (2016 & 2017)	536 ⁶	565	No	↓	↓

Data sources: WSDOT Office of Strategic Assessment and Performance Analysis and Results Washington's Open Performance Program.

Notes: **1** In addition to the measures listed in the table, WSDOT contributes performance information that is combined and reported with data from all state agencies in Goal 5: Efficient, Effective and Accountable Government. **2** A measure is "on target" if it is currently meeting its goal or if it is on a path to meet its goal by the target date. Some measures may be trending in the desired direction but not on target. **3** Value differs from previous editions. To better align with the Federal Transit Administration, WSDOT has updated its method for calculating useful life; it is now based on age or mileage instead of only age. **4** This measure is the percentage difference between the value of the reliability index in one period and the average of the value of the reliability index in the three preceding periods. **5** Measure applies to work completed by multiple state agencies. **6** This value has been updated since GNB 69.

70 STATEWIDE TRANSPORTATION POLICY GOALS DASHBOARD

Statewide policy goal/ WSDOT performance measure	Previous period	Current period	Goal	Goal met	Five-year trend (unless noted)	Desired trend
Safety						
Rate of traffic fatalities per 100 million vehicle miles traveled statewide (Annual measure: calendar years 2016 & 2017)	0.88	0.92	<1.00 ¹	✓		↓
Rate of recordable incidents for every 100 full-time WSDOT workers (Annual measure: calendar years 2016 & 2017)	4.6	4.7	<5.0	✓		↓
Preservation						
Percentage of state highway pavement in fair or better condition by vehicle miles traveled (Annual measure: calendar years 2015 & 2016)	93.0%	91.7%	≥ 90%	✓		↑
Percentage of state bridges in fair or better condition by bridge deck area (Annual measure: fiscal years 2016 & 2017)	91.2%	91.8%	≥ 90%	✓		↑
Mobility² (congestion relief)						
Highways: Vehicle Miles Traveled (VMT) on state highways (Annual measure: calendar years 2016 & 2017)	34.2 billion	34.6 billion	*	N/A		↓
Highways: Average incident clearance times for all Incident Response program responses (Calendar quarterly measure: Q2 2017 & Q2 2018)	12.0 minutes	12.5 minutes	*	N/A		↓
Ferries: Percentage of trips departing on time³ (Fiscal quarterly measure: year to year Q4 FY2017 & Q4 FY2018)	90.7%	86.8%	≥ 95%	—		↑
Rail: Amtrak Cascades on-time performance⁴ (Annual measure: fiscal years 2016 & 2017)	74.2%	50.3%	≥ 80%	—		↑
Environment						
Number of WSDOT stormwater management facilities constructed (Annual measure: fiscal years 2016 & 2017)	151	129	*	N/A		Not applicable
Cumulative number of WSDOT fish passage improvement projects constructed (Annual measure: calendar years 2016 & 2017)	316 ⁵	330	*	N/A		↑
Stewardship						
Cumulative number of Nickel and TPA projects completed⁶ and percentage on time⁷ (Calendar quarterly measure: Q1 2018 & Q2 2018, trendline for percentage on time)	380/ 87%	380/ 87%	≥ 90% on time	—		↑
Cumulative number of Nickel and TPA projects completed⁶ and percentage on budget⁷ (Calendar quarterly measure: Q1 2018 & Q2 2018, trendline for percentage on budget)	380/ 91%	380/ 91%	≥ 90% on budget	✓		↑
Variance of total project costs ⁶ compared to budget expectations⁷ (Calendar quarterly measure: Q1 2018 & Q2 2018)	Under budget by 1.5%	Under budget by 1.5%	On or under budget	✓		Not applicable

Data source: WSDOT Office of Strategic Assessment and Performance Analysis.

Notes: (*) = goal has not been set. Dash (—) = goal was not met in the reporting period. For the Economic Vitality Policy Goal, see [p. 4](#) for Results Washington Goal 2: Prosperous Economy measures. **1** The Statewide Transportation Policy Goal for this performance measure is different than the federal MAP-21 goal for the same measure. **2** Mobility does not yet include goals for people walking/biking for transportation. **3** WSDOT Ferries' on-time departures include any trip recorded by automated tracking as leaving the terminal within 10 minutes of scheduled time. **4** Amtrak Cascades' on-time performance includes any trip arriving within 10 or 15 minutes, depending on the route, of scheduled arrival time. **5** The 2016 number differs from previous publications to reflect the most recent available data. **6** Construction projects only. **7** Budget and schedule expectations are defined in the last approved State Transportation Budget. See [p. 44](#) for more information.

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MULTIMODAL ASSET PERFORMANCE DASHBOARD

WSDOT performance measure	Previous period	Current period	Goal	Goal met	Five-year trend (unless noted)	Desired trend
Highway Assets						
Bridges						
Percentage of WSDOT owned bridges in fair or better condition by bridge deck area (Fiscal years 2017 & 2018)	91.8%	92.5%	≥90%	✓		↑
Number of WSDOT owned bridges load restricted or load posted (Fiscal years 2017 & 2018)	119	120	*	N/A		↓
Current WSDOT owned steel bridge painting due or past due in millions of dollars (Fiscal years 2017 & 2018)	\$460.8	\$365.3	*	N/A		↓
Projected 10-year WSDOT owned steel bridge painting backlog in millions of dollars ¹ (Fiscal years 2017-2026 & 2018-2027)	\$740.8	\$657.5	*	N/A		↓
Current WSDOT owned bridge deck area due or past due for replacement in millions of dollars (Fiscal years 2017 & 2018)	\$99.2	\$112.5	*	N/A	 (Four-year trend)	↓
Projected 10-year WSDOT owned bridge deck area replacement backlog in millions of dollars ¹ (Fiscal years 2017-2028 & 2018-2028)	\$831.1	\$1,014.9	*	N/A	 (Four-year trend)	↓
Percentage of NHS bridge deck area located on bridges in poor condition (locally and WSDOT owned) (Fiscal years 2017 & 2018)	8.6%	7.4%	≤10%	✓		↓
Pavement						
Percentage of WSDOT owned pavement in fair or better condition ² (Calendar years 2015 & 2016)	93.0%	91.7%	≥90%	✓		↑
Highway Pavement Asset Sustainability Ratio; long term service replenishment rate ³ (Calendar years 2015 & 2016)	0.57	0.68	>0.90	—		↑
Highway Pavement Deferred Preservation Liability (backlog) in millions of dollars (Calendar years 2015 & 2016)	\$403	\$330	\$0	—		↓
Highway Pavement Remaining Service Life as percentage of total useful life (Calendar years 2015 & 2016)	47.1%	48.6%	45%-55%	✓		↑
Percentage of lane miles of interstate pavement in poor condition (Calendar years 2015 & 2016)	4.0%	3.2%	≤5%	✓	 (Three-year trend)	↓
Safety Rest Areas						
Safety rest area score through the Maintenance Accountability Process ⁴ (Calendar years 2016 & 2017)	B	B	B	✓		↑
Total visitors at safety rest areas in millions of visitors (Calendar years 2016 & 2017)	24.1 ⁵	24.4	*	N/A		N/A
Highway Maintenance						
Percentage of funded maintenance condition targets achieved ⁶ (Calendar years 2016 & 2017)	93%	77%	100%	—		↑

WSDOT performance measure	Previous period	Current period	Goal	Goal met	Five-year trend (unless noted)	Desired trend
Ferry Assets						
Vessels and Terminals						
Ferry vessel systems past due for replacement by value ⁷ (Fiscal years 2016 & 2017)	10.9%	13.3%	≤10%	—	 (Three-year trend)	↓
Ferry terminal systems past due for replacement ⁸ (Fiscal years 2016 & 2017)	5.3%	5.2%	≤6%	✓	 (Three-year trend)	↓
Ferry vessel preservation needs as percentage backlog of total vessel value (Fiscal years 2016 & 2017)	30.6%	23.6%	*	N/A	 (Three-year trend)	↓
Ferry terminal preservation needs as percentage backlog of total terminal assets (Calendar years 2016 & 2017)	5.3%	5.2%	*	N/A	 (Three-year trend)	↓
Multimodal Assets⁹						
Aviation						
Airport combined (federal, state, local) grant funding in millions of dollars ¹⁰ (Fiscal years 2016 & 2017)	\$59.7	\$88.5	*	N/A	 (Three-year trend)	↑
Percentage of airport Master Record inspections conducted by WSDOT ⁹ (Calendar years 2015 & 2016)	100%	100%	100%	✓	 (Three-year trend)	↑
Other Assets						
Facilities						
Facilities Preventive Maintenance Plan completion rate ¹¹ (Biennial measure: 2015-2017 & 2017-2019)	88%	82%	71%	✓	 (Two-biennium trend)	↑
Percentage of primary buildings ¹¹ in fair or better condition (Biennial measure: 2015-2017 & 2017-2019)	59%	56%	*	N/A	 (Two-biennium trend)	↑
10-year forecast of unmet needs (backlog) in millions of dollars ¹² (Biennial measure: 2015-2017 & 2017-2019)	\$475.5	\$474.7	*	N/A	 (Two-biennium trend)	↓

Data source: WSDOT Office of Strategic Assessment and Performance Analysis.

Notes: N/A = not available or not applicable. Asterisk (*) = goal has not been set. Dash (—) = goal was not met in the reporting period.

1 Numbers for bridge painting and deck replacement do not match 10-year needs totals on pp. 23 and 25, because contract work in progress and border bridges are not included in the totals in this table. **2** Data includes only conditions for asphalt and concrete pavement; budget constraints prohibited data collection for chip seal pavement. Condition data is weighted by vehicle miles traveled. **3** Years of service life replenished through rehabilitation divided by service life consumed on an annual basis (long-term measure). **4** Safety rest areas are assigned a score according to the Maintenance Accountability Process on a level of service (LOS) scale, A through F. **5** This number has been updated and finalized to 24.1 from 24.0 as reported in previous editions. **6** Maintenance activities are assigned asset condition targets based upon an A through F level of service scale and funding levels; actual conditions are compared to funded asset condition levels on the LOS scale. See [GNB 32, p. 19](#) for additional information on LOS standards. **7** WSDOT Ferries Division uses a risk assessment matrix, which combines the probability of system component failure with information on the failure's impact on ferry operations to gauge when ferry systems are past due for replacement; systems in condition rating 3 are past due for replacement. **8** WSDOT Ferries Division uses an economic-based model for assessing terminal needs; the model has been updated each subsequent year to improve accuracy and is not directly comparable to previous data. **9** Multimodal Assets tracking does not yet include active transportation assets. **10** Asset condition data is not currently available for the WSDOT aviation programs; grant funding and inspections for the Airport Master Record are being used as stand-in measurements until data is available. The airport grant funding measurement applies to all public-use airports. The Airport Master Record inspection measurement only applies to public-use non-primary commercial airports. **11** The Preventive Maintenance Plan is developed biennially and ranks maintenance activities based upon a criticality assessment scale. Funding is insufficient to complete all activities; completion rate is measured only for funded work categories. **12** Measured as backlog of unmet needs over the next 10 years as identified by the capital facilities strategic plan.

70 MULTIMODAL SAFETY PERFORMANCE DASHBOARD

Statewide policy goal/ WSDOT performance measure	Previous period	Current period	Goal	Goal met	Five-year trend (unless noted)	Desired trend
Highway						
Total number of fatalities on Washington state public roads ¹ (Calendar years 2016 & 2017)	536	565	<416 ²	—		↓
Total number of serious injuries on Washington state public roads ¹ (Calendar years 2016 & 2017)	2,217	2,224	<1,788 ²	—		↓
Number of fatalities per 100 million vehicle miles traveled on Washington state public roads ¹ (Calendar years 2016 & 2017)	0.88	0.92	<0.709 ²	—		↓
Serious injuries per 100 million vehicle miles traveled on Washington state public roads ¹ (Calendar years 2016 & 2017)	3.64	3.62	<3.058 ²	—		↓
Pedestrians & Bicyclists						
Number of combined pedestrian and bicyclist fatalities and serious injuries ³ (Calendar years 2016 & 2017)	591	575	<431 ²	—		↓
Ferries						
Passenger injuries per million passenger miles traveled ⁴ (Fiscal years 2017 & 2018)	0.70	0.41	<1.0	✓		↓
OSHA recordable crew injuries per 10,000 revenue service hours ^{4,5} (Fiscal years 2017 & 2018)	3.4	7.2	<7.6	✓		↓
Rail						
Total number of train-related fatalities in Washington state ⁶ (Calendar years 2016 & 2017)	13	30	*	N/A		↓
Aviation						
General aviation fatalities in Washington state ⁷ (Calendar years 2016 & 2017)	7	5 ⁸	*	N/A		↓
Public Transit						
Fatalities involving Washington state public transportation (Calendar years 2015 & 2016)	3	8	*	N/A		↓
Injuries involving Washington state public transportation (Calendar years 2015 & 2016)	295	321	*	N/A		↓

Data source: WSDOT Office of Strategic Assessment and Performance Analysis.

Notes: N/A = not available or not applicable. Asterisk (*) = goal has not been set. Dash (—) = goal was not met or is not on track in the reporting period. **1** Fatality and serious injury data for the current period has yet to be finalized. Also, numbers from the previous period may have been updated with the most recent available data and may not match those published in previous Gray Notebooks as a result. **2** These figures are the 2018 statewide targets for federal MAP-21 safety performance reporting and are based on the goal of reaching zero fatalities in 2030.

3 Pedestrian and bicyclist fatality and serious injury data for the current period was finalized in May 2018. Pedestrians include people walking or using assistive mobility devices. **4** Ferries safety measures in previous GNBs were updated quarterly but are now reported annually (updated each fiscal year) **5** OSHA = Occupational Safety and Health Administration. **6** Count includes all fatalities involving rail (passenger rail and freight rail) in Washington state. **7** General aviation includes all civil aviation operations other than scheduled air services. **8** The fatality data for the current period (calendar year 2017) has been confirmed and finalized.

70 MOVING AHEAD FOR PROGRESS IN THE 21ST CENTURY (MAP-21)

WSDOT preparing to set its MAP-21 Highway Safety performance targets

As of GNB 70 publication, WSDOT and its external partners were analyzing Moving Ahead for Progress in the 21st Century (MAP-21) Highway Safety performance (also referred to as PM1) in order to set targets for 2019. These targets will be reported to the Federal Highway Administration (FHWA) by August 31, 2018, and included in GNB 71.

WSDOT set its 2018 MAP-21 Highway Safety targets in August 2017, using 2012-2016 as the current baseline reporting period (see table below). In December 2019, FHWA will make its first determinations of whether WSDOT made significant progress toward achieving these 2018 targets.

On May 20, 2018, WSDOT established its federally-required MAP-21 targets for bridges and pavement (also referred to as PM2), and highway system performance, freight, and Congestion Mitigation and Air Quality (also referred to as PM3). Like the PM1 targets, WSDOT needs to show significant progress toward meeting PM2 and PM3 targets. These targets were established collaboratively by WSDOT and Metropolitan Planning Organizations (MPOs). WSDOT will formally submit its MAP-21 targets for PM2 and PM3 to the FHWA in the Baseline Performance Report, which is due October 1, 2018. This will begin a four-year reporting cycle for these two performance measures, which will include the Mid-Performance Period Progress Report (due by October 1, 2020) and the Full-Performance Period Progress Report, due by October 1, 2022.

WSDOT and MPOs will first report on their progress toward achieving its PM2 and PM3 targets in the 2020 mid-performance period progress report, which includes updates on two-year condition/performance and investment strategy discussions as well as target adjustment discussions. WSDOT and

MAP-21 safety reporting on an annual cycle

Targets for the Highway Safety rules (included in PM1) are on an annual reporting cycle, which differs from the two-year and four-year reporting cycles for PM2 and PM3. The next annual reporting cycle for setting safety targets for 2019 requires WSDOT to submit targets to FHWA by August 31, 2018.

MAP-21 performance measures by program area	2018 target	Penalty ¹
Highway Safety (PM1)	23 CFR Part 490 ID No. 2125-AF49	
Number of traffic fatalities on all public roads ²	≤ 415.5	Yes
Rate of traffic fatalities per 100 million vehicle miles traveled (VMT) on all public roads ²	≤ 0.709	Yes
Number of serious traffic injuries on all public roads ²	≤ 1,788.0	Yes
Rate of serious traffic injuries per 100 million VMT on all public roads ²	≤ 3.058	Yes
Number of non-motorist traffic fatalities plus serious injuries	≤ 431.5	Yes
MAP-21 Special Rules (Safety)		
Rate of per capita traffic fatalities for drivers and pedestrians 65 or older	Show yearly progress	No
Rate of fatalities on high-risk rural roads ²	Show yearly progress	Yes
Highway-railway crossing fatalities ³	Show yearly progress	No

Data source: WSDOT Transportation Safety, Quality Assurance & Risk Enterprise.

Notes: The PM1 targets were submitted on August 31, 2017, using 2012-2016 for current baseline data. 1 Penalties will not be assessed if WSDOT shows significant progress on four of five PM1 targets. Significant progress is achieved if the five-year rolling average is less than or equal to the target or less than or equal to the baseline level. 2 Performance metric includes all individuals (for example, pedestrians and bicyclists) who died or were seriously injured as a result of a motor vehicle crash in Washington. 3 Includes bicyclists and pedestrians.

MPOs can only adjust their four-year targets at that time, but must explain the basis for the changes and how the adjusted target supports expectations documented in longer-range plans.

In 2022, FHWA will use the full-performance period progress report to determine whether WSDOT has made significant progress toward its PM2 and PM3 targets. WSDOT may face penalties (see tables on p. 9 and below) if it does not show necessary improvements on

certain targets. While not showing significant progress toward targets triggers a penalty—and requires an explanation of what WSDOT will do to make future progress or require additional reporting—specific

measures in PM1 and PM2 also have financial penalties if targets are not met. These penalties require redistributing federal monies to help ensure significant progress toward specific targets in the future.

MAP-21 folios helping MPOs, stakeholders

To help MPOs and other stakeholders navigate the MAP-21 rules, WSDOT developed informational folios to ensure the agency and its partners are aligned as MAP-21 work progresses. For links to WSDOT-specific MAP-21 folios, visit www.wsdot.wa.gov/Accountability/MAP-21.

MAP-21 performance measures by program area		Current data	2-year target ^{1,2}	4-year target ^{1,2}	Penalty
Pavement and Bridges (PM2) 23 CFR Part 490 ID No. 2125-AF53					
Pavement					
Percent of Interstate pavement on the NHS in good condition		32.5% ³	N/A	30%	No
Percent of Interstate pavement on the NHS in poor condition		3.6% ³	N/A	4% ⁴	Yes
Percent of non-Interstate pavement on the NHS in good condition		18% ³	45%	18%	No
Percent of non-Interstate pavement on the NHS in poor condition		5% ³	21%	5%	No
Bridges					
Percent of NHS bridges classified in good condition (weighted by deck area)		32.8%	30%	30%	No
Percent of NHS bridges classified in poor condition (weighted by deck area)		7.8%	10%	10% ⁴	Yes
Highway System Performance, Freight, and Congestion Mitigation & Air Quality (PM3) 23 CFR Part 490 ID No. 2125-AF54					
Highway System Performance (Congestion)					
Percent of person-miles traveled on the Interstate System that are reliable		73%	70%	68%	No
Percent of person-miles traveled on the Non-Interstate NHS System that are reliable		77%	N/A	61%	No
National Freight Movement Program					
Truck Travel Time Reliability (TTTR) Index		1.63	1.70	1.75	No
Congestion Mitigation & Air Quality Program					
Non-Single Occupancy Vehicle (SOV) travel in Seattle urbanized area (NHS)		32%	32.8%	33.2%	No
Peak hours of Excessive Delay per capita in Seattle urbanized area (NHS)		23	N/A	28	No
All Pollutants (kg/day) ²		1,658.640	366.285	658.300	No
Carbon Monoxide (CO) (kg/day) ²		313.160	309.000	309.060	No
Particulate Matter less than 10 microns (PM ₁₀) (kg/day) ²		435.690	0.305	224.000	No
Particulate Matter less than 2.5 microns (PM _{2.5}) (kg/day) ²		36.820	2.100	8.700	No
Nitrogen Oxides (NOX) (kg/day) ²		872.970	54.880	116.540	No

Data sources: WSDOT Bridge and Structures Office, WSDOT Pavement Office, WSDOT Office of Strategic Assessment and Performance Analysis, WSDOT Rail, Freight, and Ports Division, WSDOT Environmental Services Office.

Notes: Federal rule allows state and MPOs to adjust four-year targets during the mid-performance period progress report. ¹ Two-year and four-year reports for PM2 and PM3 are due October 1, 2020, and October 1, 2022. ² Base emissions are for the four-year period 2013-2016 as reported in the CMAQ Public Access System. ³ PM2 "Current data" is relative to four-year pavement targets only. ⁴ The National Highway Performance Program (NHPP) targets require the percent of Interstate pavement on the NHS in poor condition not exceed 5% and the percent of NHS bridges classified in poor condition (weighted by deck area) not exceed 10%.

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Statewide traffic fatalities and serious injuries see increases in 2017

There were 565 traffic fatalities on all Washington state public roads in 2017. This is a 5.4% increase from the 536 fatalities recorded in 2016. The number of traffic fatalities has increased 8.4% in the 10 years since 2008, when there were 521. While annual traffic fatalities declined each year between 2008 and 2013, recent years have seen increases. The fatalities count for 2017 was 29.6% higher than its 10-year low of 436 in 2013.

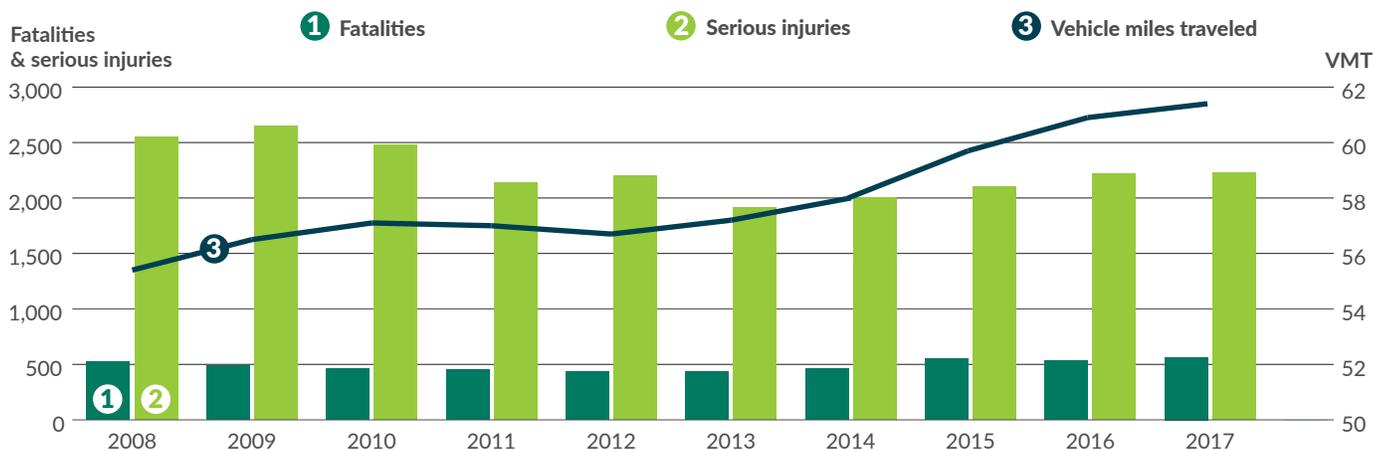
The rate of traffic fatalities per 100 million vehicle miles traveled (VMT) was 0.920 in 2017, an increase of 4.5% from 0.881 in 2016. The rate reached its lowest level in 2013 at 0.762. Looking at the past 10 years, the 2017 traffic fatality rate shows a 2.1% decrease from 2008 when it was 0.940. Meanwhile, statewide VMT has grown 9.7% overall in the 10 years since 2008.

The number of annual serious traffic injuries increased slightly (0.3%) from 2,217 in 2016 to 2,224 in 2017. Serious traffic injuries in Washington have decreased 12.9% since the count of 2,552 in 2008, but are 16.1% higher than their 10-year low of 1,916 in 2013.

The rate of serious traffic injuries was 3.621 injuries per 100 million VMT in 2017, a 0.60% decrease from the rate of 3.643 in 2016. The rate's 10-year high was 4.690 in 2009, and it reached its 10-year low at 3.349 in 2013. Throughout this article, performance metrics include all individuals (for example, motor vehicle occupants, pedestrians, and bicyclists) who died or were seriously injured as a result of a motor vehicle crash in Washington.

Fatalities and serious injuries in Washington continue five-year upward trend

2008 through 2017; Statewide traffic fatalities and serious injuries on public roadways; Statewide vehicle miles traveled (VMT) on public roadways in billions of miles



Data sources: Washington Traffic Safety Commission - Fatality Analysis Reporting System (FARS); WSDOT - Crash Database, Highway Performance Monitoring System; WSDOT - Transportation Data, GIS & Modeling Office.

Notes: Fatality data is from the preliminary fourth quarter of 2017 release of the WA-FARS Analytical File, and the final 2016 WA-FARS file. The serious injury count is as of April 2018. Both fatality and serious injury numbers are updated as new information becomes available and, as a result, may not match numbers from previous Gray Notebooks. All metrics used also include people using all modes of transportation. In order for changes in vehicle miles traveled to be visible, the minimum value on the right-hand axis is set to 50 billion VMT instead of to zero.

Notable results

- Annual statewide traffic fatalities increased 5.4% from 536 in 2016 to 565 in 2017
- The number of annual serious injuries increased slightly (0.3%) from 2,217 in 2016 to 2,224 in 2017
- Distracted drivers were involved in crashes that resulted in 156 fatalities and 646 serious injuries in 2017

WSDOT sets safety goals based on Target Zero

WSDOT works with its partners and the public to update Target Zero, the state's Strategic Highway Safety Plan (SHSP), every three years. Data analysis and evaluation are used to review and revisit Washington's safety goals, priorities, and emphasis areas. Collaboration plays a key role to ensure the SHSP remains a relevant document to all stakeholders.

Target Zero brings safety partners together, where combined efforts can achieve greater results than independent efforts, and its aspirational goal of zero fatalities and serious injuries by 2030 provides a clear and common vision for improving Washington; visit targetzero.com.

Crash data is online

WSDOT's public online Crash Data Portal provides full reporting on crashes statewide, and for all 21 Target Zero emphasis areas. Data is updated weekly to provide the most up-to-date statistics, and users can refine their queries by area, year and road type; visit bit.ly/WSDOTCrashDataPortal.

WSDOT tracks safety performance through Target Zero emphasis areas in an effort to reduce crashes statewide

WSDOT uses Target Zero to help identify investment strategies for the agency's safety program and to measure progress toward its safety performance goals. In order to track the primary factors that contribute to traffic crashes, Target Zero prioritizes 21 emphasis areas in five categories:

- Crash types (crashes caused by drivers veering out of their lanes, for example)
- Road users (such as young drivers)
- High-risk behavior (including distracted and impaired driving)
- Decision and performance improvement (for example roadway signage to inform drivers)
- Other monitored emphases

A higher priority ranking for an emphasis area indicates that it is a factor in a larger number of traffic fatalities and serious injuries. Priority level one includes factors that were involved in at least 30% of such incidents. WSDOT primarily focuses on particular crash types and road users.

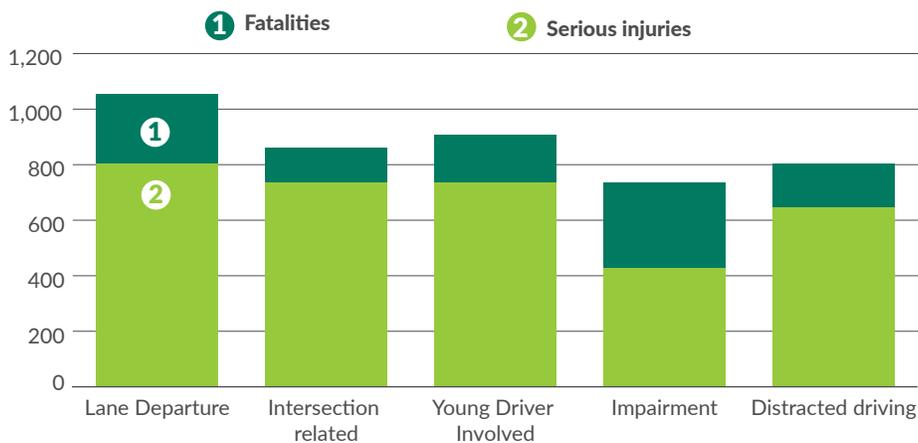
Crash types

Lane departures: In 2017, there were 250 traffic fatalities and 804 serious traffic injuries involving a lane departure. Over the last five years, lane departures were associated with an average 49% of fatalities and 38% of serious injuries.

WSDOT uses widespread, lower-cost strategies to reduce lane departures, including: enhanced warning signs,

Target Zero identifies crash types and road users as emphasis areas for traffic fatalities and serious injuries

2017; Number of fatalities and serious injuries involving select characteristics (Target Zero emphasis areas)



Data sources: Washington Traffic Safety Commission - Fatality Analysis Reporting System (FARS); WSDOT - Crash Database, Highway Performance Monitoring System.

Notes: A single fatality or serious injury may be counted in more than one category; for example, an impaired driver veering out of their lane. Fatality data is from the preliminary fourth quarter 2017 release of the WA-FARS Analytical File, and the final 2016 WA-FARS file. The serious injury count is as of April 2018. Metrics include people using all modes of transportation.

centerline and shoulder rumble strips that alert drivers when their vehicles are leaving the lane, high-friction surface treatments on curves and ramps, and cable median barriers.

Intersection related: In 2017, intersections were a factor in 122 fatalities and 737 serious injuries. Over the last five years, 22% of traffic fatalities and 35% of serious traffic injuries were due to intersection related crashes.

WSDOT uses several strategies to reduce crashes at intersections, including: installing or converting intersections to roundabouts, installing compact roundabouts, optimizing traffic signal timing, providing dynamic intersection warnings, and installing refuge islands and bulb-outs to reduce crossing distances for pedestrians at intersections.

Road users

Young driver involved: This is the only priority level one emphasis area in

the road users category. Crashes involving young drivers (but not necessarily caused by them) resulted in 169 fatalities and 737 serious injuries in 2017. Young drivers (ages 16-25) have been involved in 32% of fatalities and 35% of serious injuries in the last five years.

WSDOT uses designs such as signage and striping to reduce the likelihood of young driver error. These measures also support other drivers.

High-risk behavior

Impairment: People who drive, walk, and bicycle while impaired continue to be the most prominent factor in motor vehicle fatalities. Crashes involving impaired persons resulted in 305 fatalities in 2017 and led to 56% of all traffic fatalities in the last five years.

Impaired people were involved in 428 serious injury crashes in 2017 and 22% of all serious injury traffic crashes over the last five years.

Impairment numbers are likely under-reported because toxicology screenings are completed less often for crashes that do not result in fatalities.

Distractions driving: Washington saw 156 fatalities and 646 serious injuries related to distracted driving in 2017. Over the last five years, distracted driving has been associated with 29% of traffic fatalities.

While WSDOT does not typically address driving behavior, engineering strategies to address impairment- and distraction-related crashes include installing centerline and shoulder rumble strips and roadside barriers as well as incorporating safety performance data when setting speed limits. Additionally, WSDOT continues to support enforcement efforts to reduce impaired and distracted driving, such as Washington's new distracted driving law which took effect in Washington in July 2017—the Driving While Under the Influence of Electronics Act.

WSDOT, Ferndale reduce crash potential

The City of Ferndale collaborated with WSDOT to complete a compact roundabout at the I-5 northbound ramp at Portal Way in August 2018. Prior to construction, the lack of capacity at the intersection would create backups onto the northbound off-ramp from I-5, resulting in the potential for high-speed, rear end crashes. The \$500,000 project was locally funded with assistance from WSDOT's Northwest Region Construction Traffic Office and Northwest Region/Mount Baker Area Traffic and Development Services. It took less than three weeks to construct, and was built within existing right of way.

Roundabouts continue to reduce the potential for fatal and injury crashes throughout Washington. From 2004 to 2017 no bicyclist or pedestrian fatalities were reported at roundabouts in Washington state.



MAP-21 details online

WSDOT's MAP-21 Safety folio contains full specifics on federal requirements for safety performance and on the state's target setting process; visit bit.ly/SafetyFolio.



Strategic Plan Goal INCLUSION

The MAP-21 target setting process has been a collaborative approach with community partners. WSDOT helped compile and submit comments on the federal draft rules from the state's MPOs in early 2014, and worked to align stakeholder sentiment toward the target setting approach. The agency has hosted numerous informational and technical assistance webinars for MPOs in Washington as well as other safety partners.

Washington currently missing targets for MAP-21 safety

Washington had 565 traffic fatalities in 2017, which brought the state's five-year rolling average to 510 fatalities per year. WSDOT and the Washington Traffic Safety Commission (WTSC) had previously set a target of 415.5 or fewer fatalities per year for the five-year average in 2018.

There were 2,224 serious traffic injuries statewide in 2017, which brought the five-year average for this measure to 2,092.2 per year in 2017. Washington's statewide target for the five-year average in 2018 is 1,788 or fewer serious traffic injuries

Safety targets based on five-year averages were set in response to the Moving Ahead for Progress in the 21st Century Act (MAP-21). In April 2016, the Federal Highway Administration (FHWA) published the final rule requiring states and Metropolitan Planning Organizations (MPOs) to set and report safety performance targets across five performance measures (see chart

below). Using an approach that aligned with Target Zero, WSDOT and the WTSC aspire to reach zero for all five measures by 2030.

FHWA established the five measures to track traffic fatalities and serious injuries on all public roads in Washington and in other states. The table below shows the value of each measure for calendar year 2016, which will be used as the baseline for measuring progress toward targets.

In addition to these five measures, Washington must show improvement upon the 2016 baseline in three areas: Rate of fatalities on high-risk rural roads; per-capita rate of fatalities to drivers and pedestrians aged 65 and older; and fatalities at highway-railway crossings.

WSDOT and the WTSC finalized the statewide targets and presented them to MPOs in June 2017. MPOs are now in the process of applying the Target Zero approach to their

WSDOT helps set MAP-21 safety targets for 2018

Five-year rolling averages; Number of persons; Number of persons per 100 million vehicle miles traveled (rates); Washington public roads

Performance measure	2016 value	2018 targets
Fatalities	484.8	415.5
Serious injuries	2,086.0	1,788.0
Non-motorists: fatalities and serious injuries	503.4	431.5
Serious injury rate	3.568	3.058
Fatality rate	0.828	0.709

Data sources: Washington State Traffic Safety Commission - Fatality Analysis Reporting System; WSDOT - Transportation Data, GIS & Modeling Office.
Notes: Fatality data is from the preliminary 2017 fourth quarter release of the WA-FARS Analytical File, and the final 2016 WA-FARS file. The serious injury count is revised as of April 2018. All metrics include people using all modes of transportation.

own safety targets. WSDOT continues to work with the MPOs to provide tools, guidance and technical assistance for that target setting process. MPOs finalized their targets by February 2018. FHWA will review state and MPO progress toward the 2018 targets in December 2019.

In June 2018, WSDOT and its partners established safety performance targets for fatalities, the fatality rate, and serious injuries for calendar year 2019. The five-year average target for 2015-2019 was set at 489.2 for fatalities; 0.813 for the fatality rate; and 1,855.2 for serious injuries. Targets for the remaining two performance metrics will be set by WSDOT during August 2018.

WSDOT's grant-funded safety research continues

In 2017, WSDOT competed for—and received—nearly \$2 million in federal grants to conduct two naturalistic driving safety research projects. WSDOT was the only agency to receive a grant for more than one project and is now managing the grants while working with contractors to conduct the studies.

Both projects are ongoing and they are entering the countermeasure development phase of the research, which will identify strategies for reducing crashes.

The first research study considers driver behavior for different lighting conditions at freeway on and off ramps. Researchers found that changes in lighting conditions tended to have negligible effects on driver behavior. Next, the team will test a theory that may provide insights into a particular threshold for lighting conditions where driver behavior may change. The results of the research will be used for specific recommendations for future approaches to lighting design.

The second research study evaluates drivers' speed choice based on the layout of the road and other situational context. The research team identified some preliminary factors that are significant in speed choice and is continuing its work. The team will use its findings and other discoveries in the area of speed management to develop a guidebook and training for engineers and planners.

WSDOT crafts plan for data in federal pilot project

Safety data is critical to the successful reduction of traffic fatalities and serious injuries. It is also part of WSDOT's commitment to decision and performance improvement. During summer 2017, WSDOT worked with safety data stakeholders to develop WSDOT's

Safety Data Business Plan. The plan, which was part of a FHWA pilot project, outlines specific strategies, actions, and goals for WSDOT to support the enhancement, management, maintenance, and governance of effective data systems.

As a follow up to this initial effort, WSDOT has requested a federal assessment of its roadway and crash data through the FHWA Roadway Data Improvement Program and the National Highway Traffic Safety Administration's Crash Data Improvement Program. WSDOT will use the feedback from these assessments to further improve basic safety data (roadway, crash, and traffic volume data) used in safety analysis. The agency is working with the FHWA Office of Safety and the FHWA Office of Planning to host a peer exchange to improve the data systems used for safety analysis and asset management of roadside safety hardware.

Contributors include John Milton, Ida van Schalkwyk, and Joe Irwin

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ASSET MANAGEMENT:
BRIDGES ANNUAL REPORT

Notable results

- At the end of FY2018, 92.5% of WSDOT-owned bridges by deck area were in fair or better condition, an increase from 91.8% in FY2017
- Washington continues to meet the MAP-21 and Results Washington goals of having less than 10% of bridges by deck area in poor condition
- WSDOT conducted 1,858 bridge inspections during FY2018, 92% of which were routine
- WSDOT used strategic preservation funds to seal 244,000 square feet of bridge deck area and 5,000 lineal feet of joints during FY2018

Bridge conditions improve from 2017 to 2018

As of June 2018, 92.5% of WSDOT-owned bridges by deck area were in fair or better structural condition, improving from June 2017 when 91.8% of bridges by deck area were in fair or better condition (see table below).

Measuring bridge conditions by deck area provides a more comprehensive view of system-wide conditions than only counting the number of bridges. For example, at the end of fiscal year (FY) 2018, 165 (5.0%) of WSDOT's 3,322 bridges were in poor condition, which may result in underestimating the need for bridge repairs. Reporting bridge conditions by deck area allows WSDOT to clearly communicate that 7.5% of its bridge assets are in poor condition. This reporting method also aligns with the federal Moving Ahead for Progress in the 21st Century Act (MAP-21, see [p. 9](#)) and Results Washington, the state's performance management system (see [p. 4](#)).

The state and federal targets are identical, and apply only to the 2,341 WSDOT bridges and 205 locally owned bridges on the National Highway System (NHS; see box on [p. 17](#)). The targets require Washington to have less than 10% of its bridges weighted by deck area rated as being in poor condition (safe for travel but having advanced deficiencies such as section loss, deterioration, scour, or seriously affected structural components); Washington performed better than this standard in FY2018.

WSDOT has 92.5% of its bridges by deck area in fair or better condition, meeting performance goals

Fiscal years 2013, 2017, 2018; Condition categories; Deck area in millions of square feet in each condition category; Percent of bridges by deck area in each condition category; Number of bridges in each condition category

STRUCTURAL CONDITION		2013	2017	2018	Trend (2017-18)	Desired trend
GOOD/VERY GOOD Bridges in good condition range from those with no problems to those having some minor deterioration of structural elements.	Bridge deck area	17.6	20.3	20.9	↑	↑
	Percent of deck area	33.5%	37.3%	38.4%	↑	↑
	Number of bridges	1,555	1,699	1,701		
FAIR Primary structural elements are sound; may have minor section loss, deterioration, cracking, spalling or scour. This is the most cost-effective time to rehabilitate before the underlying structure is damaged.	Bridge deck area	30.6	29.7	29.4	↑	*
	Percent of deck area	58.1%	54.5%	54.1%	↑	*
	Number of bridges	1,574	1,450	1,456		
GOOD/VERY GOOD & FAIR TOTALS: Goal = 90% or more of deck area in fair or better condition	Bridge deck area	48.2	49.9	50.3	↑	↑
	Percent of deck area	91.6%	91.8%	92.5%	↑	↑
	Number of bridges	3,129	3,149	3,157		
POOR A bridge in poor condition has advanced deficiencies such as section loss, deterioration, scour, or seriously affected structural components, and may have weight restrictions. A bridge in poor condition is still safe for travel.	Bridge deck area	4.4	4.5	4.1	↓	↓
	Percent of deck area	8.4%	8.2%	7.5%	↓	↓
	Number of bridges	138	163	165		

Data source: WSDOT Bridge and Structures Office.

Notes: All years are state fiscal years (July 1–June 30). The above data shows WSDOT-owned bridges, culverts, and ferry terminals longer than 20 feet that carry vehicular traffic. All numbers shown in the table above are based on the revised "out-to-out" calculation method (which includes curbs and rails on the bridge) instead of the bridge width from curb to curb. The 2013 data was updated using this revised calculation method.

NHS bridges in poor condition meeting goals

Total (state and local) bridge deck area in poor condition on the NHS in Washington state decreased from 4.3 million square feet in FY2017 to 3.9 million square feet in FY2018 (see table below).

These 3.9 million square feet represent 7.4% of bridge deck area on the NHS in Washington, meeting goals set by Results Washington and MAP-21, both of which mandate that total bridge deck area in poor condition on the National Highway System not exceed 10%.

Statewide and state-owned bridge conditions improve in FY2017

Statewide, 6.6% (4.8 million square feet) of Washington's 72.3 million square feet of bridge deck area was on structures considered to be in poor condition as of June 2018.

Washington achieves state and federal goals of keeping bridge deck area in poor condition below 10% statewide

As of June 2018; Percent of bridge deck area on bridges in poor condition (Poor); Deck area in millions of square feet

	National Highway System		Statewide	
	Deck area ¹	Number of bridges	Deck area ¹	Number of bridges
WSDOT-owned	48.2	2,341	54.4	3,322
Amount Poor (%)	3.7 (7.7%)	110	4.1 (7.5%)	165
Locally owned²	4.8	205	17.9	4,088
Amount Poor (%)	0.2 (3.1%)	11	0.7 (4.4%)	156
Total	53.0	2,546	72.3	7,410
Total Poor (%)	3.9 (7.4%)	121	4.8 (6.6%)	321

Data sources: WSDOT Bridge and Structures Office and WSDOT Local Programs Office.

Notes: For locally owned bridges, Poor also includes load-restricted bridges, even if those bridges are in fair or better condition. **1** Due to rounding, some figures are not computable based on numbers in the table. **2** Bridges owned by counties and cities.

This was an improvement over 2017, when 7.6% (5.5 million square feet) of bridge deck area was located on bridges in poor condition.

WSDOT's 165 bridges in poor condition accounted for 7.5% (4.1 million square feet) of WSDOT-owned bridge deck area as of June 2018, meeting the target set by the Governmental Accounting Standards Board. The remaining 156 bridges in poor condition account for 4.4% (700,000 square feet) of bridge deck area owned by local agencies.

From July 2017 through June 2018, WSDOT repaired 18 bridges with a total of 465,877 square feet of deck area in poor condition, transitioning them to good condition. Additionally, 20 WSDOT-owned bridges—with a net total of 172,054 square feet of deck area—deteriorated to poor condition.

Condition of locally owned bridges holds steady

As of June 2018, there are 4,088 locally owned bridges in Washington state, which are crossed an average of 10 million times per day. Approximately 96% of all of Washington's locally owned bridges by deck area were in fair or better condition during the Federal Highway Administration's 2018 reporting period (April 2017 through March 2018), holding steady from the 2017 reporting period.

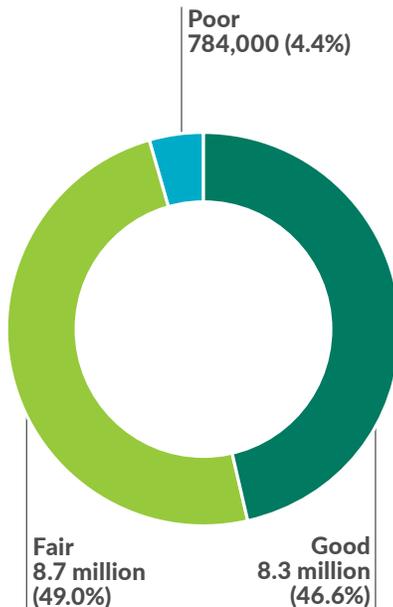
WSDOT funds and administers the Local Bridge Program, which provides funding to local agencies to preserve and improve the conditions of city and county bridges that are physically deteriorated or structurally deficient. The Bridge Advisory Committee, which is

The National Highway System (NHS)

The National Highway System (NHS) is a network of strategic highways in the United States, and includes both state and local highways as well as roads serving major airports, ports, rail and/or truck terminals, and other transport facilities. Washington's NHS network includes 53.0 million square feet of bridge deck area, of which 90.9% is state-owned and 9.1% is owned by local agencies. The bridge performance targets in both Results Washington and MAP-21 (see [p. 4](#) and [p. 9](#)) apply specifically to bridges on the NHS.

Majority of locally owned bridges in good condition in FY2018

Local agency bridge conditions by deck area for FY2018; Deck area in square feet



Data source: WSDOT Local Programs Office.
Note: This chart shows conditions for all locally owned bridges, both on and off the National Highway System.

composed of members from city and county governments as well as WSDOT staff, advised that WSDOT fund 37 projects through this program in fall 2017. Funding will help pay for work like bridge replacements and bridge rehabilitation and preservation projects such as scour repair, painting, seismic retrofit, deck overlay or joint replacement. A list of 2017 Local Bridge Program funding

recipients is available at <http://www.wsdot.wa.gov/LocalPrograms/Bridge/Funding.htm>

Cities and counties are responsible for managing local bridges, and are held to the same standards as WSDOT. Federal, state and local funding sources continue to help local agencies build new bridges and maintain existing ones.

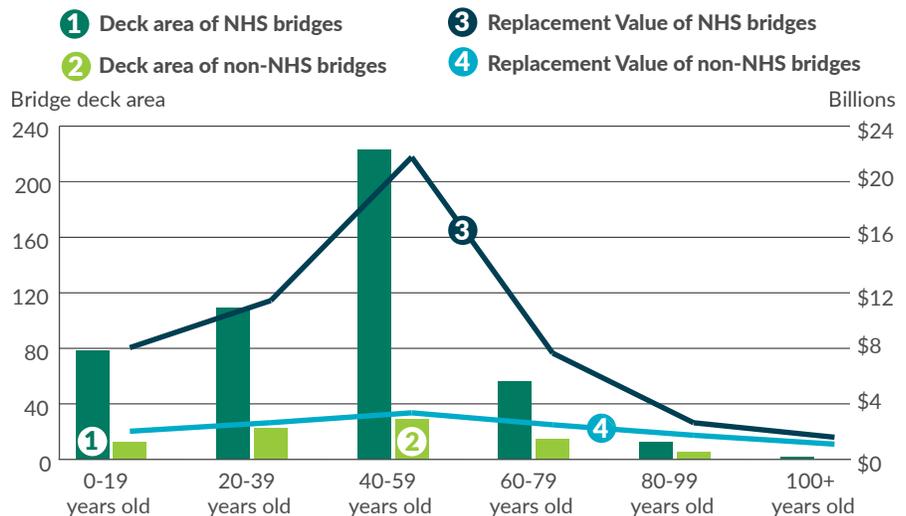
WSDOT owns 266 bridges that are 80 years or older

As of June 2018, WSDOT owned 266 bridges that were 80 years old or older. The total cost of replacing these bridges—which account for about 2 million square feet of deck area—would be more than \$2.7 billion over the next 20 years, or approximately \$135 million per year (in 2018 dollars). Of the 266 bridges older than 80 years, 158 are on the

NHS and 108 are non-NHS and account for approximately 1.4 million and 555,000 square feet of deck area, respectively. Many bridges over 80 years old will remain in use during the next 10 years—currently 27 such bridges (with 368,868 square feet of deck area) are in poor condition—and WSDOT will continue to focus on their preservation.

Majority of WSDOT's bridge deck area is located on the National Highway System and between 40 and 59 years old

As of June 2018; Bridge deck area in hundreds of thousands of square feet by age; Replacement value in billions of dollars



Data source: WSDOT Bridge and Structures Office.

Notes: The graph above shows deck area on WSDOT-owned bridges only. Replacement value describes the cost to replace all bridges in each age range.

WSDOT bridge inventory increases in FY2018

As of June 2018, the WSDOT-owned bridge inventory included 3,913 structures. In addition to WSDOT's 3,132 vehicular bridges over 20 feet long, the inventory includes structures that are less than 20 feet long and structures not open to vehicular traffic (see table below). The replacement value of all WSDOT-owned bridges is estimated to be about \$53.5 billion.

Additionally, there are 5,780 locally owned bridge structures in Washington as of June 2018, an increase of 46 structures from June

2017. Vehicular bridges longer than 20 feet account for 71% of the local bridge inventory, and total 17.9 million square feet of deck area.

A contract to replace the SR 99 Alaskan Way Viaduct in Seattle with a tunnel is underway, and a contract to remove the existing double-decker bridge once the new SR 99 tunnel opens has been awarded. When the tunnel opens to traffic (currently expected to happen in November 2018), this bridge will be removed from the state's bridge inventory.

Washington's bridge inventory increases by 16 WSDOT-owned structures

Fiscal years 2017 and 2018; Inventory of WSDOT and local bridges

	WSDOT		Local	
	FY2017	FY2018	FY2017	FY2018
Vehicular bridges longer than 20 feet	3,124	3,132	4,061	4,088
Structures less than 20 feet long	431	435	1,251	1,277
Culverts longer than 20 feet	130	133	-.1	-.1
Pedestrian structures	80	81	264	268
Ferry terminal structures	69	68	9	10
Tunnels and lids	47	48	8	6
Border bridges ²				
Maintained by border state	6 ³	6 ³	1 ⁴	1 ⁴
Maintained by Washington	5 ⁵	5 ⁵	0	0
Railroad bridges	5	5	141	131
Total Bridge Structures⁶	3,897	3,913	5,734⁴	5,780⁴

Data sources: WSDOT Bridge and Structures Office and WSDOT Local Programs Office.

Notes: **1** Locally owned culverts longer than 20 feet are included in the number of vehicular bridges longer than 20 feet. **2** WSDOT funds 50% of preservation for 11 border bridges. **3** Five of the border bridges are maintained by Oregon and one by Idaho. **4** The locally owned border bridge count is included in the number of vehicular bridges longer than 20 feet; therefore the one locally-owned border bridge is not included in the total bridge structures count. **5** Four of these bridges are shared with Oregon and one with Idaho. **6** Inventory totals do not equal the total number of state and local bridges on p. 16 or p. 17 because inventory includes miscellaneous structures that the Federal Highway Administration does not require to be inspected. FHWA requires states to report on conditions for all vehicular bridges, ferry terminals and culverts longer than 20 feet, which are the 3,322 WSDOT owned and 4,088 locally owned structures in the chart on p. 17.



Leading indicator

Control the percent of National Highway System bridges, state and locally owned, in poor condition from increasing over 10% by 2020.

Status: On plan (green)

Strategies:

1. Replacing deteriorated bridge elements: WSDOT performs major preservation repairs by addressing specific bridge elements (such as floating bridge anchor cables, expansion joints and concrete columns) to improve bridges with low condition ratings.

Percent of bridges on the NHS that are structurally deficient (by deck area)

WSDOT owned	7.7%
Locally owned	3.1%
Combined	7.4%

2. Repainting steel bridges: A protective paint coating on a steel bridge is essential to prevent corrosion, extend the bridge's service life and keep the bridge in fair or better condition. Continuing to keep up with painting can prevent the number of bridges in poor condition from increasing.

3. Repairing concrete bridge decks: WSDOT is working to reduce the number of bridges classified as being in poor condition by addressing bridges with the highest benefits and the most cost savings. One strategy is to repair and rehabilitate concrete bridge decks to extend their service life.

Majority of bridge inspections required by Federal Highway Administration in FY2018 are routine

WSDOT performed 1,858 bridge inspections in FY2018, 92% (1,706) of which were routine inspections. In addition, WSDOT conducted 77 inspections of fracture critical structures (bridges that contain support pieces or members that are under tension, where failure would likely cause a portion of or the entire bridge to collapse), 39 special (discretionary as-needed) inspections, and 36 underwater inspections.

Most of WSDOT's bridges are inspected on a two-year cycle as mandated by FHWA, but there are 33 bridges and ferry terminals which are inspected at least every 12 months due to specific factors (such as elements that are in need of repair or having a Bailey bridge installed). Additionally, a total of 373 concrete bridges that are in good condition and meet specific FHWA criteria are inspected on a four-year cycle.

WSDOT performs federally required inspections on all WSDOT-owned bridges as outlined in the National Bridge Inspection Standards to determine bridge conditions, maintain bridge safety, and identify preservation and maintenance needs.

Local agencies inspect 2,101 bridges

Local agencies performed 2,101 bridge inspections in FY2018, 96% (2,021) of which were routine. Local agencies follow the same federal guidance for inspections as the state.

Although most local governments inspect their own bridges, WSDOT conducts field reviews and provides training and technical assistance to Washington cities and counties for inspecting bridges on local roads.

WSDOT performs 1,706 routine bridge inspections and 20 routine ferry terminal inspections; Local agencies perform 2,021 routine inspections

Fiscal year 2018; Number of inspections by inspection type

Inspection type	WSDOT	Ferry terminals ¹	Local
Routine	1,706	20	2,021
Fracture critical	77	12	44
Special ²	39	12	5
Underwater	36	22	31
Total	1,858	66	2101

Data sources: WSDOT Bridge and Structures Office and WSDOT Local Programs Office.

Notes: FHWA requires inspections on vehicular bridges and ferry terminals longer than 20 feet. WSDOT performs inspections on all structures included in the inventory on p. 20 but only reports on the inspections required by FHWA. **1** Ferry terminals owned by WSDOT. **2** These are discretionary and based on known or suspected deficiencies.

WSDOT notes slight increase in number of load restricted and posted bridges to 120 in FY2018

A total of 120 WSDOT-owned bridges longer than 20 feet were load restricted or posted at the end of FY2018, up from 119 in FY2017. Nearly half (57) of WSDOT's load posted or restricted bridges are on the National Highway System, and 28.0% (33) were considered to be in poor condition in FY2018. There were 322 locally owned bridges in Washington that were load posted or restricted in FY2018 (of which nine were on the NHS), an increase from 216 in FY2017. This increase can be attributed to new requirements for agencies to load rate bridges for Specialized Hauling Vehicles (see box at right).

As part of the bridge inspection program, WSDOT performs load rating evaluations to verify whether bridges can safely carry the weight of the trucks using them. Some bridges are weight restricted because they were designed and built when the standard truck weight was lower. If a load rating evaluation result shows a

structure cannot safely carry certain loads because of bridge deterioration, damage or when it was built, WSDOT implements weight restrictions to reduce the risk of further damage and to ensure bridges are safe for the traveling public.

A bridge may first be load restricted, making it illegal for any overloaded truck to use the bridge. If the condition worsens and the bridge's capacity to carry heavy loads decreases, then the bridge will be "load posted." This limits the allowable weight of trucks to below typical legal weights. Preservation activities, such as replacing or reinforcing a deteriorated bridge element, are required to correct load restricted or posted bridges.

WSDOT Northwest Region maintenance added reinforcing steel plates to the stringers on two timber bridges on SR 542 near Mt. Baker during FY2018 to keep those structures from being load posted.

WSDOT has 120 load restricted or load posted bridges

Fiscal years 2014 through 2018; Number of bridges with weight restrictions



	FY2014	FY2015	FY2016	FY2017	FY2018
 LOAD RESTRICTED ¹	124	109	118	105	109
 LOAD POSTED ²	13	11	8	14	11
TOTAL	137	120	126	119	120

Data source: WSDOT Bridge and Structures Office.

Notes: **1** A "load restricted" bridge cannot be legally used by an overloaded truck. **2** A "load posted" bridge limits the allowable weight of trucks to below typical legal weights.



Strategic Plan Goal PRACTICAL SOLUTIONS

By load restricting certain bridges, WSDOT uses Practical Solutions to reduce the risk of further damage to the structure while ensuring traveler safety. The practice also allows WSDOT to develop sound, cost-effective repair or replacement strategies.

Load rating changes

FHWA issued a memo to all states in November 2013 to clarify load ratings for Special Hauling Vehicles (SHVs). SHVs are closely-spaced, multi-axle, single-unit trucks (such as dump trucks, construction vehicles, solid waste trucks and other hauling trucks) introduced by the trucking industry in the last decade. FHWA requested a revised load rating on bridges with spans less than 200 feet by December 31, 2017, and on those with spans greater than 200 feet by December 31, 2022.

In Washington, there are 2,739 structures that require new load ratings, of which 430 load ratings have been completed (as of early July 2018). WSDOT received additional funding for the effort in the 2017-2019 biennium, and plans to complete these additional load ratings within eight years (contingent on continued funding).



Strategic Plan Goal
**PRACTICAL
SOLUTIONS**

Maintenance repairs—a key element of WSDOT's Practical Solutions approach to bridge asset management—can substantially extend how long bridges can be used before rehabilitation (more extensive repair) or replacement is needed.

WSDOT takes a Practical Solutions approach to bridge preservation and asset management

As of June 30, 2018, there were 1,060 projects on WSDOT's list of priority one bridge repairs (repairs that should be completed within one year). This is a 7.3% increase from June 2017, when there were 987 projects on the list, and a 407% increase over 2010, when there were only 209 projects on the priority one bridge repair list.

Projects are added to the priority one bridge repair list twice a year by the WSDOT Bridge & Structures Office. Projects come off the list as they are completed by WSDOT maintenance crews. Additionally, some projects on the list are deferred because they are in a work zone (and crews cannot reach the bridge). Regional staff may also determine that certain projects are beyond the scope of WSDOT's maintenance crews and must therefore be contracted out.

Repairing elements extends bridge service life

WSDOT hires contractors to address specific bridge element deterioration beyond what its maintenance crews can accomplish. Contracted bridge repair work may include replacing steel anchor cables on floating bridges, repairing deteriorated concrete columns, replacing large steel expansion joints, and rehabilitating mechanical and electrical systems on movable bridges.

During FY2018, WSDOT awarded contracts on bridge projects that included replacing expansion joints on a variety of bridges throughout

the state, replacing anchor cables on the I-90 floating bridges and repairing concrete columns on several bridges on SR 153. WSDOT is also under contract to replace gear boxes in the movable span of the SR 104 Hood Canal floating bridge and to rehabilitate concrete columns on the US 101 Kennedy Creek bridges.

WSDOT considers multiple factors before making bridge repairs

When prioritizing bridge repair needs, WSDOT considers the severity of the issue, the importance of the route and the risks involved in delaying repairs. For the 2017-2019 biennium, there is \$44.0 million in planned funding for bridge repairs. Additionally, there are \$478,000 and \$1.9 million reserves for as-needed preservation work on the SR 520 floating bridge and the SR 16 Tacoma Narrows Bridge, respectively. Total funding for bridge repairs in the 2015-2017 biennium (July 2015 through June 2017) was \$37 million.

WSDOT continues Systematic Preventive Maintenance program

WSDOT has allocated \$6.0 million to perform systematic preventive maintenance (SPM) on bridges during the 2017-2019 biennium; this additional funding represents a 14% increase in the agency's overall bridge maintenance budget, and a 26% increase in the fixed bridge maintenance budget. Forty-four percent of the bridge maintenance budget is allocated to maintaining

and operating tunnels and movable bridges. As of June 30, 2018, the agency had spent approximately \$1.9 million on SPM projects, which have included sealing over 244,000 square feet of deck area and 5,000 lineal feet of joints in order to keep out chlorides (which accelerate deterioration).

SPM is an asset management strategy that focuses on using planned maintenance treatments to extend the useful life of existing bridges in a cost-effective way.

WSDOT maintains 12 movable bridges

WSDOT maintains 12 movable bridges and shares the maintenance of three others with bordering states. The average age of these bridges is 73 years. The oldest, at 102 years, is the I-5 Columbia River bridge between Portland and Vancouver. WSDOT has \$6.7 million budgeted in the 2017-19 biennium for movable bridge repairs, with the majority of the funds directed toward the SR 104 Hood Canal bridge and the I-5 Columbia River bridge.

In next decade, 616 WSDOT bridges will need repairs to concrete decks

As of June 2018; Dollars in millions

Bridge deck status	Number of bridges	Square footage ¹	Cost to repair
Contract work in progress	18	323,500	\$31.6
Past due for repair ²	20	141,800	\$13.1
Due for repair ³	50	1,565,100	\$99.4
To be due in next 10 years	528	11,974,000	\$902.4
Total 10-year needs	616	14,004,400	\$1,046.5

Data source: WSDOT Bridge and Structures Office.

Notes: **1** Square footage is rounded to the nearest hundred. **2** Bridges with more than 5% of deck area patched or spalled are classified as "past due." **3** Bridges with 2% to 5% of deck area patched or spalled are classified as "due."

WSDOT estimates concrete bridge deck repair costs at \$1 billion over 10 years

WSDOT has 18 bridges under contract to receive deck repairs and overlays, and plans to spend \$31.6 million on concrete bridge deck rehabilitation during the 2017-2019 biennium. These planned expenditures will cover 3.0% of the more than \$1.0 billion WSDOT expects to need for concrete bridge deck repairs over the next 10 years (see table below).

Most WSDOT-owned bridges have reinforced concrete decks. The agency's comprehensive bridge deck program aims to economically repair and overlay these decks to prolong their lifespan and avoid expensive deck replacements. Deck repairs and protective overlays extend bridges' service lives by at least 25 years and are more cost-effective than replacing the entire deck; rehabilitating decks with a concrete overlay costs about \$80 per square foot, while replacing the deck entirely costs \$300 per square foot.



Strategic Plan Goal PRACTICAL SOLUTIONS

By rehabilitating concrete bridge decks using modified concrete overlays rather than replacing them with new decks, WSDOT saves approximately \$220 per square foot of bridge deck area.

Spalling

When reinforcing steel in concrete bridge decks starts to corrode (for example, due to winter weather or the use of deicing salt), the concrete starts to "spall" (pothole) and deteriorate. WSDOT crews repair spalled areas annually, but these repairs are temporary and typically last one to three years. Once the total area of repairs and/or patching exceeds 2% of the total deck area, the bridge is added to the list of future needs projects and classified as structurally deficient. Bridge deck overlay projects are prioritized based on the total square footage of deterioration and the type of freight route on which the bridge is located, with bridges on vital freight routes and those leading to islands getting higher priority.



Strategic Plan Goal **PRACTICAL SOLUTIONS**

WSDOT always estimates the cost of both rehabilitating a bridge and replacing it before deciding on a course of action. If the cost of rehabilitation is 60% or more of the cost of replacement, the agency will replace the bridge.



The I-290 bridge over the Spokane River in Spokane is currently in the design phase of the replacement process.

WSDOT rehabilitates bridge decks on I-90 near Snoqualmie Pass

This project is currently under construction and is rehabilitating the existing bridge decks and adding new concrete overlays to three bridges on I-90 near Snoqualmie Pass. Preserving these bridges is vital for the movement of freight and goods along with normal public travel to eastern Washington.

The I-90 Denny Creek bridge opened to traffic in 1981 and is the first segmental post-tensioned, box girder bridge constructed by WSDOT. It has a replacement value of nearly \$280 million.

The current bridge contract work for the three bridges will be completed in fall 2018 with a total cost of about \$14 million.

As of June 2018, WSDOT had 24 bridges that had been rehabilitated twice using a concrete overlay. In these cases, the agency was able to replace the first, worn-out overlay with a second, extending the service life of the bridge deck further without the need for a full deck replacement.

WSDOT will need to replace or rehabilitate 111 bridges over the next 10 years

WSDOT has 111 bridges statewide that should be replaced or rehabilitated over the next 10 years. The total estimated cost to address these bridges is approximately \$711 million.

The agency has active contracts underway on six of the 111 bridges. These contracts amount to about \$40.2 million and will replace two bridges, cover Washington's share of costs to replace a border bridge to Idaho north of Spokane, replace the concrete deck on two bridges, and replace a timber deck on a steel truss bridge.

WSDOT currently manages 15 bridges that are in poor condition and require replacement (excluding the State Route 99 Alaskan Way Viaduct Bridge,

WSDOT owns 35 bridges that currently need replacement, rehabilitation

As of June 2018; Dollars in millions

Bridge status	Number of bridges	Square footage ¹	Cost to repair
Contract work in progress	6	180,900	\$40.2
Current replacement need	15	138,900	\$223.3
Current rehabilitation need	20	823,800	\$119.2
Rehabilitation/Replacement need within 10 years	70	370,700	\$328.3
Total 10-year needs	111	1,514,400	\$711.0

Data source: WSDOT Bridge and Structures Office.

¹ Square footage is rounded to the nearest hundred.

which has an active replacement contract). An additional 20 bridges in poor condition need rehabilitation—major preservation repairs—with one of these bridges requiring full bridge deck replacement.

WSDOT paints steel bridges to extend service life

WSDOT completed two painting projects on steel bridges during FY2017. The agency has seven bridges under contract to be painted in the 2017-2019 biennium and \$80.8 million for steel bridge painting in during this period. WSDOT will need to repaint 180 steel bridges within the next 10 years (see table below).

WSDOT paints its steel bridges on state highways as needed to protect them against premature corrosion. The agency currently maintains 311 steel bridges that require painting on a regular basis. Washington also has eight steel bridges that cross state lines, and while WSDOT does not directly manage all eight, the agency shares painting costs equally with the bordering states.

WSDOT will need to paint 180 steel bridges in next 10 years

As of June 2018; Dollars in millions

Bridge deck status	Number of bridges	Steel surface square footage ¹	Cost to repair
Contract work in progress	7	948,600	\$61.8
Past due for painting ²	30	2,061,800	\$111.5
Due for painting ³	69	5,146,100	\$253.8
Border bridges ⁴	4	720,900	\$58.3
To be due in next 10 years	70	6,715,000	\$292.1
Total 10-year needs	180	15,592,400	\$777.5

Data source: WSDOT Bridge and Structures Office.

Notes: **1** Square footage is rounded to the nearest hundred. **2** Steel bridges with more than 5% of steel exposed are classified as "past due for painting." **3** Steel bridges with 2% to 5% of steel exposed are classified as "due for painting." **4** Excludes steel surface area for bridges managed by the Oregon Department of Transportation.

WSDOT working to prevent over-height truck impacts

Bridges on or over state-owned highways are damaged by truck impacts every year; in 2017, there were 20 recorded bridge hits that required WSDOT to conduct a post-incident inspection. Damage from truck impacts can be extensive. Repairs to the Chamber Way bridge over I-5 in Chehalis, which was hit by an over-height truck in 2016, cost approximately \$15.6 million.

In order to reduce the number of incidents in which over-height trucks damage WSDOT-owned bridges, the agency has been adding signs to all bridges with clearances under 15'6", and has also developed an online tool that allows truck drivers and owners to enter the height of their truck and compare it to the height of the bridges on their intended route (see bit.ly/VerticalClearanceTool).

Connecting Washington addresses bridge preservation needs

As part of the \$16 billion Connecting Washington transportation revenue package, \$1.2 billion is allocated to state highway preservation, which includes maintaining pavement, bridges and traffic operations. WSDOT is working to identify bridge preservation projects as part of this investment. Three bridge projects identified by the Legislature will be addressed in the next six years:

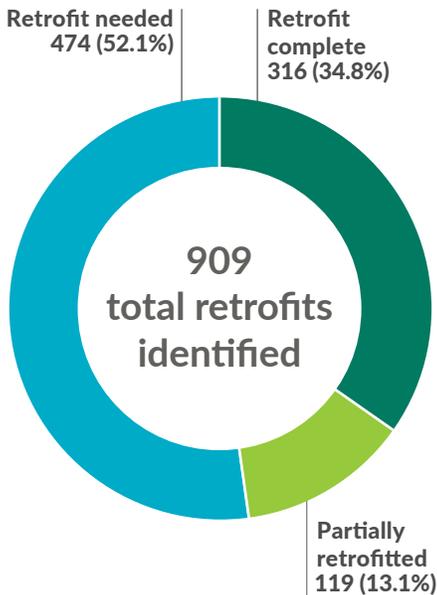
- SR 241 Yakima River bridge near Mabton—\$12.0 million
- US 12 Wildcat Creek bridge near White Pass—\$12.0 million
- SR 107 Chehalis River bridge near Montesano—\$19.9 million

In addition to the \$1.2 billion, another \$57.5 million from Connecting Washington is allocated to bridge preservation and repair projects over the next 16 years. No specific projects have been identified as part of this investment.

Connecting Washington funding will not allow WSDOT to restore all of its bridges in poor condition to being in fair or better condition. "Poor" condition does not mean that a bridge is unsafe or in need of replacement; typically, one or more of the bridge's components requires either repair or preservation. Using a lowest life cycle cost approach to delivering preservation strategies means that there will continue to be bridge components that need work.

Connecting Washington will help address the most critical needs for bridges. In particular, it will help eliminate most of the weight restrictions on many of the deficient bridges and help prevent new weight restrictions from being imposed.

WSDOT completes 316 seismic retrofits to its bridges
As of June 2018



Data: WSDOT Bridges and Structures Office.
Notes: Includes all retrofits completed since the launching of the Seismic Retrofit program in 1991. Figures do not include foundations.



The I-405 Green River bridge is an example of a structure that WSDOT will address through its bridge seismic retrofit program. The bridge's columns have hollow cores which were originally constructed in the 1960s and are more vulnerable to earthquake damage than those with solid columns.

WSDOT continues bridge seismic retrofit program

After suspending bridge seismic retrofit projects during FY2017 to reassess its use of available funding, WSDOT has established a plan to perform seismic retrofits on selected bridges in the Puget Sound area.

WSDOT plans to complete retrofits of bridges on strategic highway routes over the next 10 years, including:

- I-5 from JBLM to I-405 (South Center)
- SR 518/I-5 to SeaTac Airport
- I-405
- I-90/I-405 to Snoqualmie Pass
- SR 526/I-5 to Paine Field

The WSDOT Bridge Seismic Retrofit Program, launched in 1991, is a plan to make 909 bridges in the western half of Washington state resilient to earthquakes. So far, 316 bridges have been retrofitted to withstand earthquakes, most commonly by the crews installing steel jacketing around columns or by adding concrete and steel reinforcing to pier caps.

Contributors included Matt Beattie, Chris Keegan, Roman Peralta, Tim Rydholm, DeWayne Wilson, Helen Goldstein and Joe Irwin

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INCIDENT RESPONSE QUARTERLY UPDATE

Notable results

- WSDOT responded to 15,033 incidents during the second quarter of 2018, providing about \$23.5 million in economic benefit
- WSDOT cleared incident scenes in an average of 12 minutes and 30 seconds, reducing traffic delay and the risk of secondary incidents

Incident Response teams help improve driver safety at 15,033 incidents

WSDOT's Incident Response (IR) teams assisted at 15,033 incidents during the second quarter (April through June) of 2018. This averages to a WSDOT team responding to an incident scene roughly every eight minutes and 43 seconds during the quarter. There were 996 fewer incidents during the second quarter of 2018 than during the same period in 2017, about a 6.2% decrease.

WSDOT teams cleared each of the 15,033 incidents in an average of 12 minutes and 30 seconds. This is 30 seconds longer than the average incident clearance time for the same quarter in 2017. During the second quarter of 2018 there was a 4.6% decrease in incidents lasting more than 90 minutes while incidents lasting 15-90 minutes decreased 0.1% and incidents lasting less than 15 minutes decreased 7.9%. The proportion of incidents which blocked at least one lane was 26.9% for this quarter compared to 24.4% during the same quarter last year.

WSDOT focuses on safety when clearing incidents, working to reduce incident-induced delay as well as the potential for secondary incidents. Secondary incidents occur in the congestion resulting from a prior incident and may be caused by distracted driving, unexpected slowdowns or debris in the roadway. The IR teams help alert drivers about incidents and clear the roadway to reduce the likelihood of new incidents.

WSDOT's assistance at incident scenes provided an estimated \$23.5 million in economic benefits during the second quarter of 2018 by reducing the impacts of incidents on drivers. These benefits are provided in two ways:

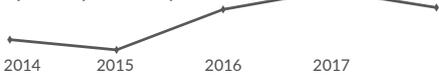
- WSDOT reduces the time and fuel motorists waste in incident-induced traffic delay by clearing incidents quickly. About \$13.3 million of IR's economic benefits for the quarter result from reduced traffic delay.
- WSDOT helps prevent secondary incidents by proactively managing traffic at incident scenes. About \$10.2 million of IR's economic benefits result from preventing an estimated 2,837 secondary incidents and resulting delay. This figure is based on Federal Highway Administration data that indicates 20% of all incidents are secondary incidents.

Based on WSDOT's budget for IR, every \$1 spent on the program this quarter provided drivers roughly \$15.64 in economic benefit. A table summarizing the IR program's performance and benefits for the quarter is on the next page.

Second quarter (April through June)
2017 and 2018



Second quarter incidents trend up over past five years



Data source: Washington Incident Tracking System.

Notes: The data above only accounts for incidents to which an IR unit responded. IR data reported for the current quarter (Q2 2018) is considered preliminary. In the previous quarter (Q1 2018), WSDOT responded to 14,838 incidents, clearing them in an average of 13.1 minutes. These numbers have been confirmed and are now finalized.

The mission of WSDOT's Incident Response program is to clear traffic incidents safely and quickly, minimizing congestion and the risk of secondary incidents. The statewide program has a biennial budget of \$12 million, about 59 full-time equivalent positions and 69 dedicated vehicles. Teams are on-call 24/7 and actively patrol approximately 1,300 centerline miles (3,400 lane miles) of highway on major corridors around the state during peak traffic hours. This covers approximately 18% of all state-owned centerline miles statewide.

WSDOT's Incident Response provides an estimated \$23.5 million in economic benefit

April through June 2018; Incidents by duration in minutes; Time in minutes; Costs and benefits in millions of dollars

Incident duration	Number of incidents ¹	Percent blocking ²	Average incident clearance time ³ (all incidents)	Cost of incident-induced delay	Economic benefits from IR program ⁴
Less than 15 min.	11,486	17.3%	4.8	\$13.9	\$6.4
Between 15 and 90 min.	3,382	57.0%	30.6	\$29.6	\$12.9
Over 90 min.	165	88.4%	176.5	\$9.7	\$4.1
Total	15,033	26.9%	12.5	\$53.2	\$23.5
Percent change from the second quarter of 2017	↓6.2%	↑2.5%	↑4.2%	↓1.0%	↓1.6%

Data source: Washington Incident Tracking System.

Notes: Some numbers do not add up due to rounding.

- 1 Teams were unable to locate 846 of the 15,033 incidents. Because an IR team attempted to respond, these incidents are included in the total incident count. Other performance measures do not include the incidents IR teams were unable to locate.
- 2 An incident is considered blocking when it shuts down one or more lanes of travel.
- 3 Incident clearance time is the time between an IR team's first awareness of an incident and when the last responder has left the scene.
- 4 Estimated economic benefits include benefits from delay reduction and prevented secondary incidents. See [WSDOT's Handbook for Corridor Capacity Evaluation, 2nd edition, pp. 45-47](#) for WSDOT's methods to calculate IR benefits.

WSDOT teams respond to 165 over-90-minute incidents

WSDOT Incident Response units provided assistance at the scene of 165 incidents that lasted more than 90 minutes during the second quarter of 2018. This is eight fewer incidents—a 4.6% decrease—than the same quarter in 2017. While these over-90-minute incidents accounted for 1.1% of all incidents, they resulted in 18.3% of all incident-related delay costs.

Eight of the 165 over-90-minute incidents took six hours or more to clear (referred to as extraordinary incidents). This is one fewer extraordinary incident than the same quarter in 2017. The eight extraordinary incidents took an average of eight hours and 25 minutes each to clear, accounting for 2.6% of all incident-induced delay costs for the quarter.

The average incident clearance time for all over-90-minute incidents was two hours and 56 minutes. This is about one minute and 30 seconds faster than the same quarter in 2017. Excluding the eight extraordinary incidents, WSDOT's average clearance time for over-90-minute incidents was two hours and 44 minutes. Performance data reported in this article is from WSDOT's Washington Incident Tracking System, which tracks incidents to which a WSDOT IR team responded.

For more information on how WSDOT calculates these figures and all IR performance metrics, see [WSDOT's Handbook for Corridor Capacity Evaluation, 2nd edition, pp. 45-47](#).

Contributors include Vince Fairhurst, Michele Villnave, Takahide Aso, Dustin Motte

Customer feedback:

- "Jan arrived fast. Helped with a spare tire, was very professional. Thank you for such a great service. He saved my life!"
- "Mr. Ostrander was very kind and professional. It was wonderful to be helped by a veteran. He made us feel very safe."
- "Shane went above and beyond to help me get back on the road safely and chatted with me to help calm me down. He was a hero!"

70 WSDOT FERRIES QUARTERLY UPDATE

Ferries service reliability remains above goal

There were 40,703 regularly scheduled ferry trips during the fourth quarter of fiscal year (FY) 2018 (April through June 2018). WSDOT Ferries completed 99.5% (40,485) of these trips. This exceeds the annual service reliability performance goal of 99% and is 0.1 percentage point higher than the same quarter in FY2017 (see table on the next page).

In the fourth quarter of FY2018, Ferries canceled 250 trips and was able to replace 32 of them, resulting in 218 net missed trips. This was 20 fewer net missed trips than the 238 missed during the same quarter in FY2017.

Of the 250 canceled trips for the quarter, 98 were due to low tides on the Port Townsend – Coupeville route. The second highest category was vessel-mechanical issues, with 94 cancellations. Forty-seven (50%) of the 94 cancellations were on the Anacortes – San Juan – Sidney route due to a bent propeller on the Motor/Vessel *Yakima*.

Ridership decreases during the fourth quarter of FY2018

WSDOT Ferries ridership was approximately 6.44 million during the fourth quarter of FY2018 and roughly 28,200 (0.5%) fewer passengers than the corresponding quarter in FY2017. Ridership during the fourth quarter of FY2018 increased on six of the nine routes compared to the same quarter in FY2017.

The Port Townsend – Coupeville route had the largest percentage increase in ridership (3.7% or 8,188 passengers) compared to the same quarter in FY2017, and the Edmonds – Kingston route had a 1.8% (19,523 passengers) increase compared to the same quarter last year. The San Juan Domestic route had a 2.2% (12,424 passengers) decrease in ridership compared to the same quarter last year.

On-time performance decreases

WSDOT operated ferries at lower speeds during the quarter in a successful effort to reduce fuel consumption in alignment with Results Washington, the state's performance management system. Fuel efficiency improved, but on-time performance decreased. In addition, issues with the M/V *Yakima* caused it to operate at reduced speeds on the San Juan Domestic route, further impacting on-time performance for that route.

On-time performance was 86.8% in the fourth quarter of FY2018, 3.9 percentage points lower than the same quarter in FY2017. The quarterly rate is below Ferries' annual on-time performance goal of 95%.

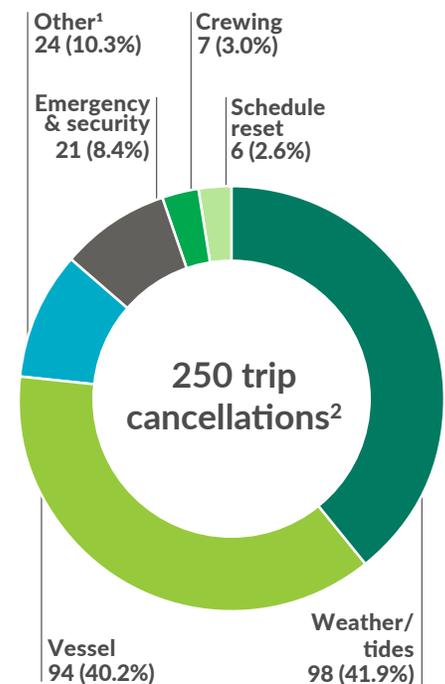
On-time performance decreased on eight of nine routes compared to the fourth quarter of FY2017. In the fourth quarter of FY2018, 13.2% (5,271) of trips did not leave the terminal within 10 minutes of the scheduled departure time, higher than 9.3% (3,722) for the same quarter in FY2017.

Notable results

- *Ferries completed 40,485 (99.5%) of its 40,703 regularly scheduled trips in the fourth quarter of fiscal year 2018*
- *Ferries ridership was approximately 6.44 million in the fourth quarter of fiscal year 2018, about 28,200 (0.4%) fewer than the corresponding quarter in FY2017*

Low tides result in high number of cancellations for the quarter

Fourth quarter (April - June) FY2018



Data source: WSDOT Ferries.

Notes: Fiscal years (FY) run from July 1 through June 30. As a result, April through June 2018 represents the fourth quarter of FY2018.

¹ The category for "Other" includes vessel availability, issues at terminals, and events like disabled vehicles, environmental reasons and non-vessel related incidents that can impact operations. ² Ferries replaced 32 of the 250 canceled trips for a total of 218 net missed trips.

Ferries on-time performance decreases, reliability up slightly in the fourth quarter of fiscal year 2018

April through June FY2017 and FY2018; Annual on-time goal = 95%; Annual service reliability goal = 99%

Route	On-time performance (fourth quarter)				Trip reliability (fourth quarter)			
	FY2017	FY2018	Status	Trend	FY2017	FY2018	Status	Trend
San Juan Domestic	79.0%	63.0%	-16.0%	↓	99.8%	99.2%	-0.6%	↓
Anacortes/Friday Harbor – Sidney, B.C.	84.7%	67.3%	-17.3% ¹	↓	100.0%	98.0%	-2.0%	↓
Edmonds – Kingston	96.2%	94.7%	-1.4% ¹	↓	99.9%	99.8%	-0.1%	↓
Fauntleroy – Vashon – Southworth	88.8%	88.4%	-0.4%	↓	99.1%	99.9%	0.8%	↑
Port Townsend – Coupeville	93.7%	94.2%	0.5%	↑	95.9%	96.3%	0.4%	↑
Mukilteo – Clinton	95.9%	95.8%	-0.1%	↓	100.0%	100.0%	0.0%	
Point Defiance – Tahlequah	98.4%	96.6%	-1.8%	↓	99.9%	99.1%	-0.8%	↔
Seattle – Bainbridge Island	90.4%	85.7%	-4.7%	↓	100.0%	99.9%	-0.1%	↓
Seattle – Bremerton	93.9%	87.3%	-6.6%	↓	99.0%	99.4%	0.4%	↑
Total system	90.7%	86.8%	-3.9%	↓	99.4%	99.5%	0.1%	↑

Data source: WSDOT Ferries.

Notes: FY = fiscal year (July 1 through June 30). As a result, April through June 2018 represents the fourth quarter of FY2018. A trip is considered delayed when a vessel leaves the terminal more than 10 minutes later than the scheduled departure time. Ferries operates 10 routes but combines the Anacortes – Friday Harbor route with the San Juan Interisland route as the San Juan Domestic for on-time performance and service reliability. Due to unique fare collection methods in the San Juan Islands, and similar origin and destination legs on both routes, some statistics cannot be separated between the two routes. ¹ Numbers shown in the table have been rounded to the tenth and may not add correctly.

The Anacortes/Friday Harbor – Sidney, B.C. route had the largest decrease in on-time performance (17.3%) compared to the same quarter last year. The San Juan Domestic route had a 16.0% decrease in on-time performance compared to the same quarter last year.

Passenger injuries decrease, employee injuries increase

The rate of passenger injuries per million riders decreased from 0.77 in the fourth quarter of FY2017 to 0.31 in the fourth quarter of FY2018, representing a drop from five to two total passenger injuries. The passenger injury rate during the quarter met Ferries' goal of having

one or fewer injuries per million riders.

The rate of Occupational Safety and Health Administration recordable crew injuries per 10,000 revenue service hours increased from 2.2 in the fourth quarter of FY2017 to 6.0 during the same period in FY2018. This represents 12 more injuries than the same quarter in FY2017, but achieved Ferries' annual goal of having a rate of fewer than 7.6 crew injuries per 10,000 revenue service hours.

Revenue follows ridership, trends up for the quarter

Ferries farebox revenue continued its upward trend, coming in at about \$52.8 million for the fourth quarter of FY2018. Farebox revenue was about \$1.17 million (2.3%) more than the same quarter in FY2017, and about \$1.14 million (2.2%) above projections.

Passenger complaints increase for the quarter

Ferries received 569 complaints and 28 compliments during the fourth quarter of FY2018, compared to 333 complaints and 35 compliments during the same quarter in FY2017.

One hundred fifteen (20.2%) complaints in the fourth quarter of FY2018 were related to on-time performance, an increase of 112 from the three complaints in the same period in FY2017. This increase is primarily due to the fact WSDOT operated ferries at lower speeds during the quarter to reduce fuel consumption, leading to decreased on-time performance and improved fuel efficiency.

Seventy-five (13.2%) complaints involved loading and unloading, a decrease of 41 from the 116 complaints in the fourth quarter of FY2017.

Contributors include Matt Hanbey, Donna Thomas, Joe Irwin and Dustin Motte



The online version of this article links to an interactive map at bit.ly/GNBferriesmap.

70 RAIL: AMTRAK CASCADES QUARTERLY UPDATE

Amtrak Cascades stations in Washington see slight increase in use in FY2018

Just over 1.6 million passengers got on or off trains at one of the 18 Amtrak Cascades stations during fiscal year (FY) 2018 (July 2017 through June 2018)—no significant change from FY2017. Among the 12 stations in Washington, there was a slight (1%) increase in passenger use between FY2017 and FY2018, with more than 12,000 additional passengers getting on or off the train in Washington.

Tukwila and Centralia saw the largest percentage increases in passenger use of any stations on the Amtrak Cascades line, increasing 10% from FY2017 to FY2018. Each Amtrak Cascades station between King Street Station in Seattle and Union Station in Portland also saw increases in passenger numbers during FY2018.

Despite increases in passenger use between Seattle and Portland, there was a 5% decrease in overall passenger miles traveled along the entire Amtrak Cascades corridor from FY2017 to FY2018. Amtrak Cascades routes in Washington saw a decline of 4% in passenger miles traveled, from 111 million in FY2017 to 107 million in FY2018.

The two busiest stations on the corridor—King Street Station and Union Station—both served more passengers in FY2018, with approximately 1% more ons and offs each. Because these stations serve so many passengers every day, these small percentage increases represent significant increases in the total passengers served (more than 12,000 additional passengers between the two stations).

Contributors include Teresa Graham, Barbara LaBoe, Janet Matkin, Kathryn Blumhardt and Helen Goldstein

Total number of passengers getting on or off trains¹ at Amtrak Cascades stations decreases slightly

Fiscal years (July 1 through June 30) 2017 and 2018

Station ²	FY2017	FY2018	Change	Station ²	FY2017	FY2018	Change
Vancouver, B.C.	171,000	162,000	-5%	Centralia	21,000	23,000	10%
Bellingham	52,000	49,000	-6%	Kelso	25,000	26,000	4%
Mount Vernon	18,000	17,000	-6%	Vancouver, WA	73,000	76,000	4%
Stanwood	5,000	5,000	0%	Portland ³	408,000	414,000	1%
Everett	24,000	22,000	-8%	Oregon City ³	14,000	12,000	-14%
Edmonds	24,000	22,000	-8%	Salem ³	40,000	38,000	-5%
Seattle	478,000	484,000	1%	Albany ³	20,000	19,000	-5%
Tukwila	30,000	33,000	10%	Eugene ³	52,000	46,000	-12%
Tacoma	86,000	88,000	2%	Other ⁴	28,000	24,000	-14%
Olympia	50,000	54,000	8%	Total	1,619,000	1,614,000	0%

Data source: WSDOT Rail, Freight and Ports Division.

Notes: **1** Measures the number of passengers moving through stations by counting the number of riders that get on or off the train at each station (rounded to nearest thousand). **2** The stations are owned by different entities, primarily city governments and local transit agencies. WSDOT owns one station (Stanwood) and Amtrak owns two stations (Edmonds and Tacoma). **3** Station located in Oregon. **4** Other includes RailPlus passengers, riders whose origin and destination was unknown, and passengers who deferred their trip to another day.

Notable results

- Amtrak Cascades passenger use increased by 1% at Washington stations in FY2018
- All Amtrak stations between Seattle and Portland saw increases in passengers getting on or off trains in FY2018

Measuring Station Use

Passenger use at each station is measured by “on-offs,” or the number of riders who get on or off trains at a given station. For example, someone who rides Amtrak Cascades from Kelso to Seattle is counted as one passenger using the Kelso station (where they board the train), and as one passenger using the Seattle station (where they get off the train).

70

FISH PASSAGE BARRIERS
ANNUAL REPORT

Notable results

- WSDOT corrected 14 fish passage barriers in 2017, improving access to 45.5 miles of potential upstream habitat
- Since 2013, WSDOT has corrected 55 fish passage barriers within the case area of the 2013 federal injunction, restoring access to 18% of previously blocked habitat

Fish Passage Annual
Report online

For a summary of WSDOT's progress in correcting fish passage barriers during the previous year and over the life of the program, see the latest version of the Fish Passage Annual Report: <http://bit.ly/FishPassage18>.

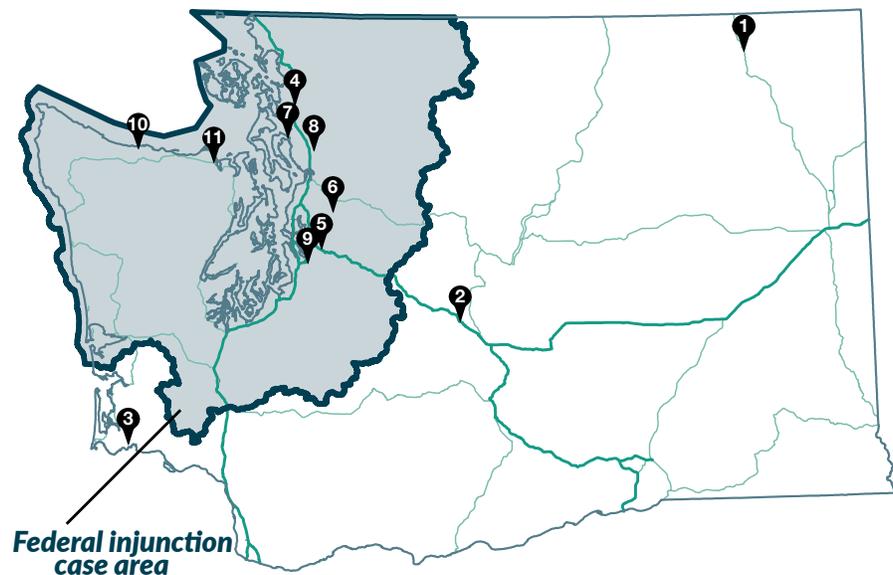
WSDOT improves access to 45.5 miles
of potential upstream habitat in 2017

WSDOT corrected 14 fish passage barriers statewide in 2017, restoring fish access to 45.5 miles of potential upstream habitat. Eleven of the corrected fish passage barriers completed in 2017 are applicable to a March 2013 federal injunction that requires WSDOT to restore access to 90% of blocked habitat within the case area shown in the map below by 2030 (for more information, visit <http://www.wsdot.wa.gov/Projects/FishPassage/>).

As of 2017, WSDOT has corrected 330 fish passage barriers to date, which includes restoring statewide access to an estimated 1,042 miles of potential habitat for fish, including salmon, bull trout, steelhead and cutthroat trout. The total estimated miles of potential upstream habitat can vary from year to year as information comes to light through additional surveys and unforeseen items, such as natural upstream barriers, are identified.

WSDOT started working collaboratively with the Washington Department of Fish and Wildlife (WDFW) in 1991 to systematically identify and correct fish passage barriers that occur where state-owned highways intersect streams. Correcting fish passage barriers contributes to healthy fish and wildlife, which is part of Results Washington, Gov. Jay Inslee's statewide performance reporting program.

14 fish passage barriers corrected in 2017 — improved access to — 45.5 miles of upstream habitat



Data source: WSDOT Environmental Services Office.

Notes: Numbers on markers correspond with numbers represented in the table on p. 33. Numbers 5 and 8 have multiple fish passage barrier correction sites in the same area, with three and two projects, respectively.

WSDOT corrects fish passage barriers using bridge designs and stream simulation culverts designed to provide conditions close to those of a natural stream. These corrections take place as either stand-alone projects for high-priority barriers, or as part of larger transportation projects.

WSDOT works to comply with upheld injunction

WSDOT has corrected 55 fish passage barriers applicable to the March 2013 federal court injunction. These corrections have restored access to about 225 miles, or roughly 18%, of previously blocked habitat within the federal injunction case area. Eleven of the 55 barriers were corrected by projects completed in 2017, as shown below and on the map on p. 32.

In June 2018, the U.S. Supreme Court split 4-4, which upheld a lower circuit ruling that requires WSDOT to correct fish passage barriers that intersect state-owned roads for 90% of blocked habitat in the case area. This decision ends the litigation process. WSDOT needs to correct approximately 450 barriers and restore access to approximately 1,000 miles of potential habitat within the case area by 2030 to be in compliance with the injunction.

A barrier correction project is applicable to the injunction if it corrects a culvert that is a documented barrier to salmon or steelhead in the case area. Some barrier correction projects are not applicable to the injunction because they are outside the case area.



Strategic Plan Goal PRACTICAL SOLUTIONS

One way WSDOT approaches fish passage barrier correction is by integrating fish barrier projects with planned road construction, including safety and mobility projects. This is a cost-effective way to accelerate barrier correction and reduce mobilization costs.

WSDOT corrects 14 fish passage barriers in 2017

Numbers correspond to map above

No.	County	Road	Body of water
1	Ferry	US 395	Matsen Creek
2	Kittitas	I-90	Resort Creek
3	Pacific	SR 401	Megler Creek
Fish barrier corrections applicable to 2013 federal injunction			
4	Skagit	I-5	Fisher Creek
5	King	I-90	North Fork Issaquah Creek
5	King	I-90	Tributary to North Fork Issaquah Creek
5	King	I-90	Tributary to North Fork Issaquah Creek
6	King	SR 203	Thayer Creek
7	King	SR 900	Green Creek
8	Snohomish	SR 531	Edgecomb Creek
8	Snohomish	SR 531	Edgecomb Creek
9	Snohomish	SR 532	Church Creek
10	Clallam	SR 112	Nordstrom Creek
11	Clallam	US 101	Matriotti Creek

Data Source: WSDOT Environmental Services Office.

Note: For more information, see the 2018 Fish Passage Annual Report: <http://bit.ly/FishPassage18>.

FBRB funding complements WSDOT salmon restoration investment

The Brian Abbott Fish Barrier Removal Board (FBRB), administered jointly by the WDFW and the Recreation and Conservation Office (RCO), was established in 2014 to adopt policies, evaluate criteria and rank fish passage barrier correction projects for funding consideration by the Legislature. Two funding pathways are available:

- **Coordinated pathway** targets fish passage barrier correction projects that are located near other fish passage projects to effectively leverage effort and state investment;
- **Watershed pathway** prioritizes fish passage barrier correction projects within prioritized stream reaches and subbasins provide the largest benefit to salmon populations.

Local and state agencies, tribal governments, nonprofit organizations and private landowners are among those eligible to apply to the FBRB. The Legislature approved approximately \$19.7 million in grants for the Watershed pathway in the 2017-2019 biennium. Coordinated pathway project applications are currently being reviewed and ranked; 10 of them leverage a completed or planned WSDOT fish passage barrier correction.

WSDOT uses spawner surveys to measure success

Thirteen of the 20 fish passage barriers that WSDOT corrected in 2016-2017 and surveyed in 2017-2018 had signs of fish presence. This includes Little Skookum Creek under SR 108, which had 495 chum salmon and 66 spawning nests upstream of the new fish-passable structure. These salmon spawner surveys, conducted by WDFW, are one way that WSDOT measures the success

of the fish passage program. The surveys count adult salmon that are using a newly corrected fish passage barrier. WDFW surveys streams with fish passage barrier corrections up to three times after construction to look for signs of salmon, steelhead or spawning nests. The survey series may be repeated the following year if no signs of salmon or steelhead were observed.

Matsen Creek emergency repair project wins WSDOT 2017 Environmental Excellence Award

In April 2017, WSDOT collaborated with WDFW to install a fish-passable structure during emergency repairs on US 395 near Kettle Falls after the road was washed out due to flooding.

The washout of US 395 was caused by an undersized culvert that became plugged with debris following heavy spring rainfall. The washout affected 375 feet of roadway and highlighted the need for adequate culverts to maintain functioning roadways, as well as fish-passable waterways.

The Matsen Creek emergency repair project won the WSDOT 2017 Environmental Excellence Award for incorporating a fish passage correction into the project, saving millions of dollars in future work.

The 30-day project also involved the construction of an access road to facilitate future inspections, maintenance and landscape restoration.

Contributors include Susan Kanzler, Damon Romero, Tammy Schmidt, Kathryn Blumhardt and Dustin Motte



A 4-foot culvert caused this washout of US 395 at Matsen Creek in April 2017. WSDOT worked with WDFW to complete emergency repairs to the road, and add a 12-foot diameter, fish passable culvert.

70

GENERAL ENVIRONMENTAL PERMITS ANNUAL REPORT

General Hydraulic Project Approvals help expedite WSDOT maintenance work

WSDOT saved an estimated 2,340 hours in 2017 by using nine different General Hydraulic Project Approvals (GHPAs). The Washington Department of Fish and Wildlife (WDFW) issued the GHPAs, which allowed WSDOT to complete 585 maintenance and preservation activities in 2017, an increase of 14% from the 513 completed in 2016. WSDOT saved an average of four hours for every activity conducted with GHPAs.

WSDOT uses nine GHPAs to streamline 585 maintenance activities

2016 and 2017; Nine GHPAs used; Number of maintenance activities and hours saved per GHPA classification

GHPA classification	2016		2017	
	Activities	Hours	Activities	Hours
Bridge and ferry terminal maintenance	308	1,232	243	972
Beaver dam removal	136	544	238	952
Culvert maintenance	30	120	50	200
Channelized stream maintenance	24	96	28	112
Bridge debris removal and relocation	6	24	13	52
Other ¹	9	36	13	52
Total	513	2,052	585	2,340

Data source: WSDOT Environmental Services Office.

Note: 1 "Other" maintenance activities include fishway structures maintenance and repair, freshwater and marine water sediment test boring, and removing, repairing and replacing piles at ferry terminals.

Using GHPAs expedites preservation and maintenance work that is in-water or crosses a body of water because WSDOT is not required to apply for individual permits every time such work is necessary. GHPAs allow WSDOT to quickly address roadway maintenance needs (including removing debris from bridge piers, washing bridges to prepare for inspections, and repairing culverts), while maintaining high environmental standards. GHPAs include provisions to protect fish habitat and water quality that WSDOT staff and contractors must implement while using these general permits.

Contributors include Gretchen Coker, Virginia Stone, Kathryn Blumhardt and Dustin Motte

Notable results

- General Hydraulic Project Approval (GHPA) usage saved WSDOT approximately 2,340 hours of staff time in 2017
- WSDOT used nine GHPAs to complete 585 maintenance activities in 2017, an increase of 14% from 2016



Strategic Plan Goal PRACTICAL SOLUTIONS

In 2017, WSDOT improved its process for developing and updating GHPAs by submitting pre-applications to WDFW and negotiating draft provisions before officially submitting permit applications. Completing draft provisions before submitting applications ensures the permits are issued on time, improving internal and external collaboration.

The General Environmental Permits Annual Report will transition into Hydraulic Project Approvals Annual Report in future editions of the GNB. WSDOT has successfully used GHPAs for over 15 years to streamline the permit process for maintenance work. Restructuring this article provides flexibility to report on other permit streamlining opportunities that WSDOT uses for Hydraulic Project Approvals besides GHPAs.

70 FREIGHT SEMI-ANNUAL REPORT

Notable results

- *Washington was the fifth most trade-dependent state in the country in 2017*
- *The number of trucks entering Washington from Canada remained steady between 2016 and 2017*
- *Washington waterborne freight tonnage increased 10.2% in 2016 compared to 2015*
- *Air cargo tonnage in Washington increased 7.6% in 2016 compared to 2015*

Washington was the fifth most trade-dependent state in 2017

Washington had total imports and exports valued at \$126.3 billion in 2017, down slightly (0.2%) from \$126.6 billion in 2016. It was the fifth most trade-dependent state in the country in 2017, behind Louisiana, Michigan, Texas and Kentucky. The state's ranking dropped from 2016, when it was ranked second most trade-dependent.

The change in ranking is mostly due to a 10.5% decline in aerospace exports, which were down in 2017 (\$41.6 billion) compared to 2016 (\$46.5 billion). More domestic demand for planes (which are not counted as exports), a trend toward buying smaller and less expensive planes, and increases in competing plane exports from South Carolina are factors in the decrease.

Despite the ranking change, the state's overall gross business income for freight-dependent industry sectors increased. In 2017, gross business income for freight-dependent industry sectors was \$595 billion, up 5.3% from \$565 billion in 2016.

WSDOT supports the freight system and freight-dependent industries by directly managing the state's highway and ferry system, a short line railroad, and several freight rail programs. WSDOT also provides policy analysis and planning coordination statewide for the movement of goods in commerce.

WSDOT's work on freight movement improves travel and freight reliability on strategic corridors, which contributes to Results Washington Goal 2: Prosperous Economy, as found in Gov. Jay Inslee's performance management effort.

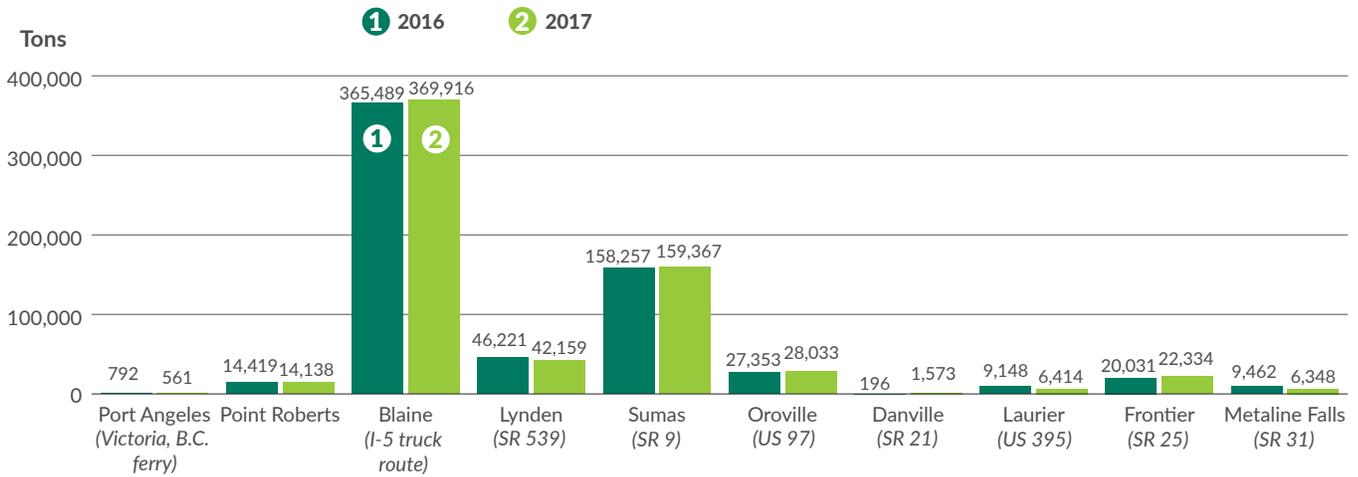
Number of trucks entering Washington from Canada holds steady from 2016 to 2017

The number of freight trucks entering Washington from Canada held relatively steady, going from 652,427 crossings in 2016 to 652,038 crossings in 2017. The border crossings at Blaine and Sumas continue to see the bulk of the traffic; 81.2% of freight trucks that entered Washington from Canada in 2017 used one of those two crossings.

The Blaine border crossing on Interstate 5 had 369,916 trucks in 2017, a 1.2% increase from 365,489 in 2016. While the Sumas crossing on State Route 9 had 159,367 trucks in 2017, marking a 0.7% increase over the 158,257 in 2016.

Trucks border crossing numbers see minor changes

Number of truck crossings from Canada into Washington at the border; 2016 and 2017



Data source: U.S. Department of Transportation, Bureau of Transportation Statistics and WSDOT Rail, Freight, and Ports Division.

Note: Border crossing graph does not include Ferry (642 crossings in 2017), Boundary (551 crossings in 2017), or Friday Harbor (two crossings in 2017) ports of entry.

Waterborne freight shipment tonnage in 2016 up 10.2% from 2015

Total waterborne freight activity in Washington was approximately 122.9 million tons in 2016, up 10.2% from 111.5 million tons in 2015. Waterborne freight is categorized as foreign, domestic or intrastate, depending on its origin and destination. In 2016, 69% of

waterborne freight was foreign, 23% was domestic and 8% was intrastate (with both the origin and destination in Washington). Key export commodities from Washington include food and food products (63%), petroleum products (15%) and lumber products (9%).

Seattle and Tacoma see increase in waterborne freight in 2017

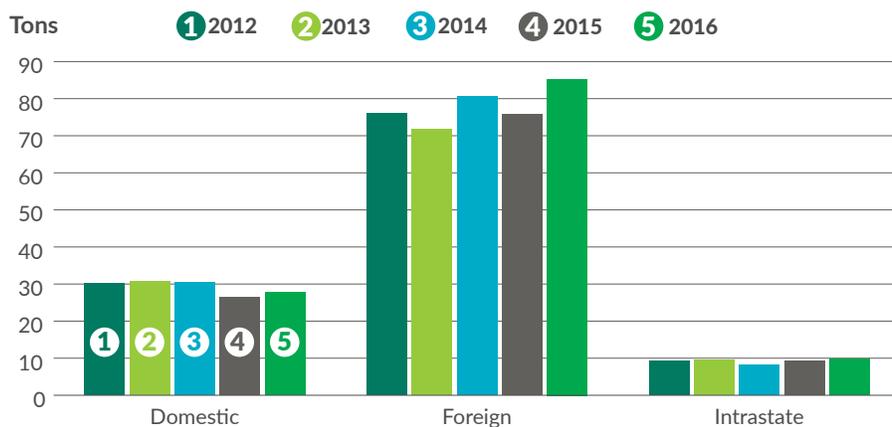
The ports of Seattle and Tacoma, which merged their marine cargo operations into the Northwest Seaport Alliance in 2015, saw a combined 2.4% increase in waterborne freight in 2017.

Containerized port freight is measured by 20-foot equivalent units (TEU), which represents the freight in one 20-foot marine cargo container. These containers carry many different types of freight and come in different lengths; for example a 40-foot container is equal to two TEUs.

In 2017, the ports of Seattle and Tacoma—by far the largest ports in the state—handled a combined 3.7 million TEUs of cargo, up from 3.6 million in 2016. The 2017 figures are also 5% higher than the five-year average.

Majority of waterborne freight in Washington crosses international borders

2012 through 2016; Tonnage in millions; Domestic, foreign and waterborne freight



Data source: U.S. Army Corps of Engineers, Navigation Data Center.

Waterborne freight activity in Washington continues to mirror national trends. The strength of the U.S. dollar, grain prices, shipping line consolidation, and changes among competitors from Canadian and southwest U.S. ports all contribute to this growth.

Air cargo tonnage continues to increase in 2016

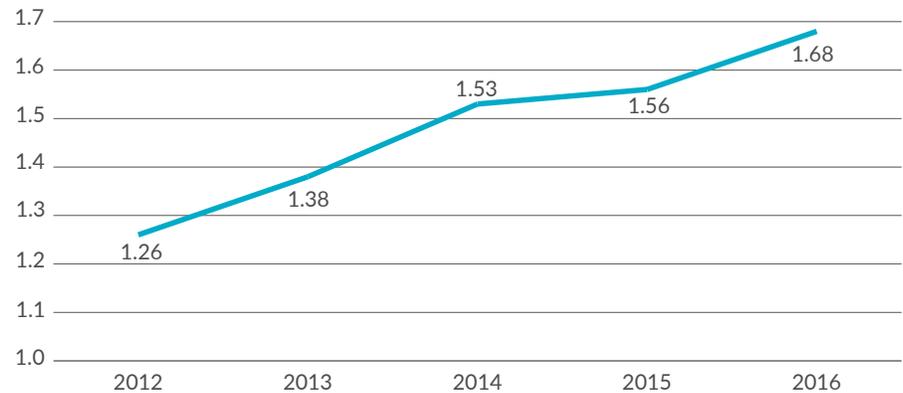
Airports in Washington saw cargo increase again in 2016—according to the most recent federal data available—continuing a trend that began in 2013. All airports combined handled 1.68 million tons of cargo (plane plus cargo weight) in 2016 compared to 1.56 million tons in 2015—a 7.6% increase—according to the Federal Aviation Administration (FAA).

Seattle-Tacoma (Sea-Tac) International Airport continues to handle the bulk of all air cargo in the state, with 55.9% of the statewide total in 2016, according to the FAA.

According to the Port of Seattle, Sea-Tac handled approximately 425,000 metric tons of total cargo (not including plane weight) in 2017—an increase of 16% over 2016 (366,000 metric tons) and 28% over 2015 (333,000 metric tons). Sea-Tac Airport ranks 20th in terms of air cargo volume in North America and provides daily, non-stop service to 90 domestic and 25 international destinations.

Total air cargo tonnage continues upward trend in Washington

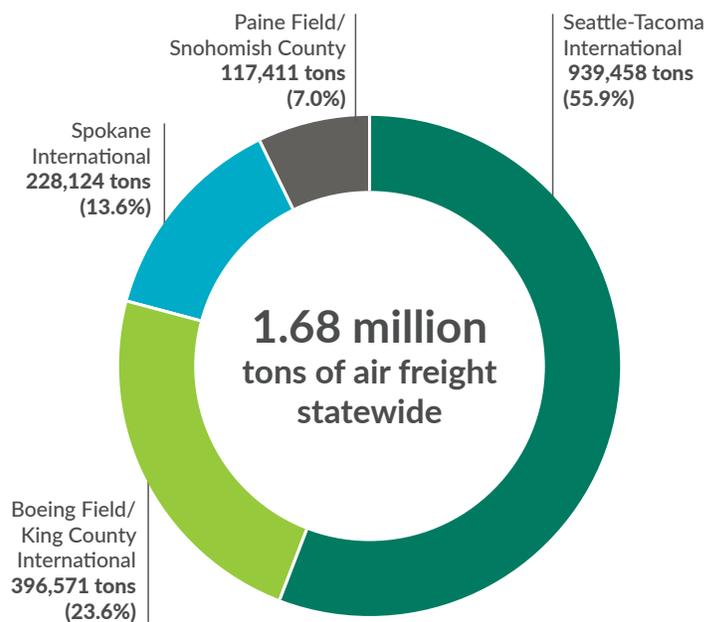
2012 through 2016; Tonnage measured in millions; Plane plus cargo weight



Data source: Federal Aviation Administration.

Seattle-Tacoma airport moves majority of air freight in 2016

Tonnage and percent share of air freight per airport in Washington state



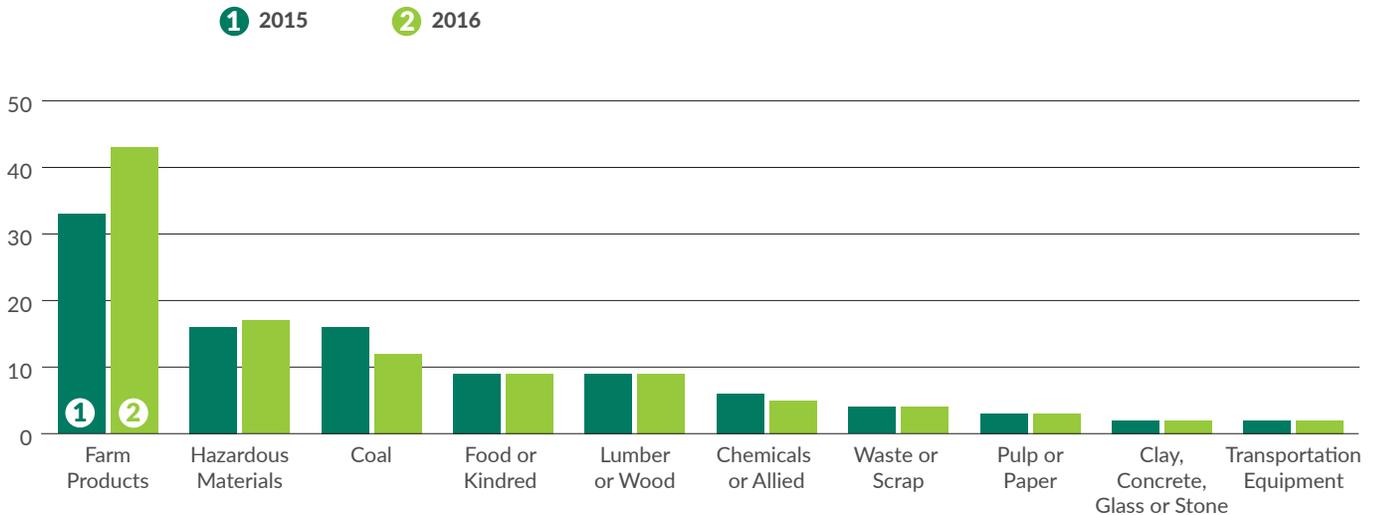
Data source: Federal Aviation Administration.

The top six commodities moved through Sea-Tac in 2017 were cherries, industrial machinery and computers, seafood, electric machinery, integrated circuits and

footwear parts. High-value and time-sensitive goods often move through airports, which play a key role in supporting manufacturing, agriculture and service sectors in the state.

Railroads carrying more farm products and hazardous materials

2015 and 2016; Commodities shipped by rail; Tonnage in millions



Data source: WSDOT Rail, Freight, and Ports Division.

Freight rail tonnage increases by 4% in 2016

Railroads in Washington state transported 121.2 million tons of freight in 2016, a 4% increase from 116.6 million tons in 2015. Fifty-four percent (65.9 million tons) of rail freight in the state was shipped here and terminated here—a 13% increase in tonnage from 2015 (58.4 million tons). Freight rail shipments passing through Washington (starting outside the state and not terminating here) accounted for 28% (33.5 million tons) of total rail freight tonnage—a 7% decrease in tonnage from 2015 (35.8 million tons).

Amount of farm products shipped sees 29% increase in 2016

In 2016, there were 42.6 million tons of farm products (such as soybeans, corn, wheat and dried peas) shipped

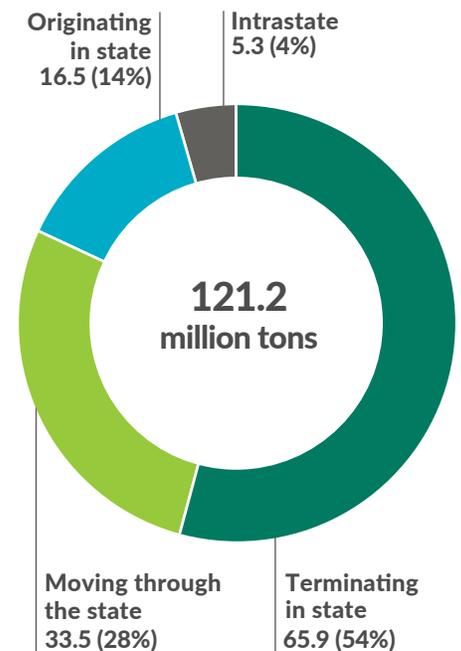
by rail, an increase of 29% (9.6 million tons) from 33.0 million tons in 2015, mostly due to an increase in soybean and corn shipments.

Railroad shipments of hazardous materials increased by 2.4%, from 16.1 million tons in 2015 compared to 16.5 million tons 2016. About 11.9 million tons of coal shipped by rail in 2016—a 28% decrease compared to 16.5 million tons in 2015—largely due to a decrease in Montana coal shipped to British Columbia through Washington.

Contributors include Barbara LaBoe, Janet Matkin, Matthew Pahs, Wenjuan Zhao, Regan Hansen and Dustin Motte

Most rail freight in Washington comes from outside the state

2016; Tons in millions; Percent of total tonnage originating and terminating in the state



Data source: WSDOT Rail, Freight, and Ports Division.

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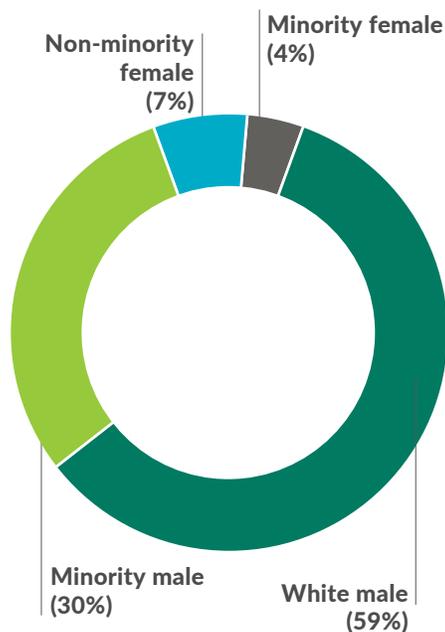
INCLUSION ANNUAL REPORT

Notable results

- In 2017, apprentices worked 307,953 hours on WSDOT projects, with 41% of hours completed by women and minorities
- Employee survey results reveal that 74% of WSDOT employees feel the agency consistently demonstrates support for a diverse workforce
- As of April 2018, WSDOT's Community Engagement Training has developed 43 trainers; 218 employees have been trained

Forty-one percent of apprentice hours worked by women and minorities

2017; Percentage of 307,953 total hours



Data source: WSDOT Office of Equal Opportunity.

WSDOT supports diversity and inclusion through apprenticeship opportunities

In 2017, apprentices worked 307,953 hours on WSDOT projects, earning experience that is expected to help them advance in their trades. Of the apprentice hours reported, 126,261 or 41% represent hours worked by women and minorities. WSDOT values diversity and inclusion; the agency endeavors to see that there are fair and equal opportunities for everyone to participate in its contracts.

WSDOT requires apprentices be used on projects to help individuals gain experience needed for successful future employment in the construction trades and ensure there are skilled construction industry workers able to complete Connecting Washington projects. These are not WSDOT employees, but rather, they apprentice with construction firms with whom WSDOT contracts.

Governor's taskforce recognizes WSDOT best practices

In 2017, the Interagency Apprenticeship Utilization Requirements in Public Works Task Force reported to Gov. Jay Inslee that WSDOT's Apprenticeship Utilization Program requirements are best practices, meaning they are generally accepted as being most effective. The task force emphasized the importance of the agency's centralized apprenticeship reporting system, which simplifies the process for contractors. The task force also praised WSDOT's practice of specifying an upfront utilization plan, requiring contractors to submit a plan showing how they will get the apprentice hours necessary to meet minimum requirements.



In June 2017, 14 pre-apprentice trainees graduated from a grant funded, four-week direct entry program through the Pacific Northwest Ironworkers Local 86 in Tukwila.

Pre-apprenticeships increase minority and women in the trades

WSDOT received \$1.5 million in Connecting Washington funding for the 2017-2019 biennium to provide Pre-Apprenticeship Support Services (PASS) grants to pre-apprenticeship programs that increase the number of minorities and women gaining meaningful employment in the highway construction trades. This underscores WSDOT's commitment to building a workforce that looks like the people and communities the agency serves.

Pacific Northwest Ironworkers Local 86 in Tukwila is one grant recipient. In June 2017, 14 pre-apprentice trainees graduated from a four-week direct entry to employment program. Graduating gives trainees "dispatch papers" that allow them to go to work within days of graduating.

WSDOT & FHWA partner to provide tuition assistance

A smaller version of the PASS grant program, WSDOT's On the Job Training Support Services Program, through partnership with Federal Highway Administration, awarded more than \$12,000 in tuition assistance to students. These students were either just beginning their apprenticeships with the Operating Engineers, were already Electricians, Diesel Technicians, or were starting a Pre-Apprenticeship program from January through April 2018. The program is designed for individuals interested in the highway construction trades.

WSDOT program pairs 17 mentors with 28 protégés

WSDOT has paired 17 prime contractor or consultant mentors with 28 protégés, owners of firms who are certified by the Office of Minority and Women's Business Enterprises (OMWBE) or registered as a small or veteran's businesses, since the program launched in summer 2017. The program is working to pair an additional 19 mentors with 29 protégés.

Created in response to Gov. Jay Inslee's diverse business participation goal, part of his Results Washington initiative, the program helps enhance the capabilities and participation of minority, small, veteran, and women business enterprises, and disadvantaged businesses that are able to perform work on transportation-related projects.

WSDOT misses three of four voluntary state small business contracting goals

WSDOT fell short of meeting three of four voluntary goals—while making progress on all but one goal and exceeding another—for certified or state registered businesses (see chart, top of page 42).

The goal for Washington state agencies for contracting with small businesses is 5%. In state fiscal year 2017 (July 2016 through June 2017), WSDOT achieved 10.61% participation, an increase of 2.46 percentage points from the 8.15% achieved in FY2016, and exceeding the goal of 10%. Minority and non-minority women's businesses also count toward the small business

goal. "Small business" includes firms certified by OMWBE and all firms that indicate that they are "small" as defined by state administrative law.

The state contracting goal for minority owned businesses is 10%. From FY2016 to FY2017, WSDOT's participation with minority-owned businesses increased from 3.68% to 4.05%, missing the goal but increasing from the previous year.

The state contracting goal for veteran owned businesses is 5%. From FY2016 to FY2017, WSDOT's participation with veteran-owned businesses decreased from 0.70% to 0.15%, missing the goal. WSDOT has increased outreach to the veterans business community in an effort to improve participation.

What is a Disadvantaged Business Enterprise?

According to the United States Department of Transportation, "DBEs are for-profit small business concerns where socially and economically disadvantaged individuals own at least a 51% interest and also control management and daily business operations. African Americans, Hispanics, Native Americans, Asian-Pacific and Subcontinent Asian Americans, and women are presumed to be socially and economically disadvantaged. Other individuals can also qualify as socially and economically disadvantaged on a case-by-case basis."

The state contracting goal for women-owned businesses is 6%. From FY2016 to FY2017, WSDOT increased its participation with women owned businesses from 2.89% to 3.84%, missing the goal but increasing from the previous year.

WSDOT falls short of DBE goal in first half of FFY2018

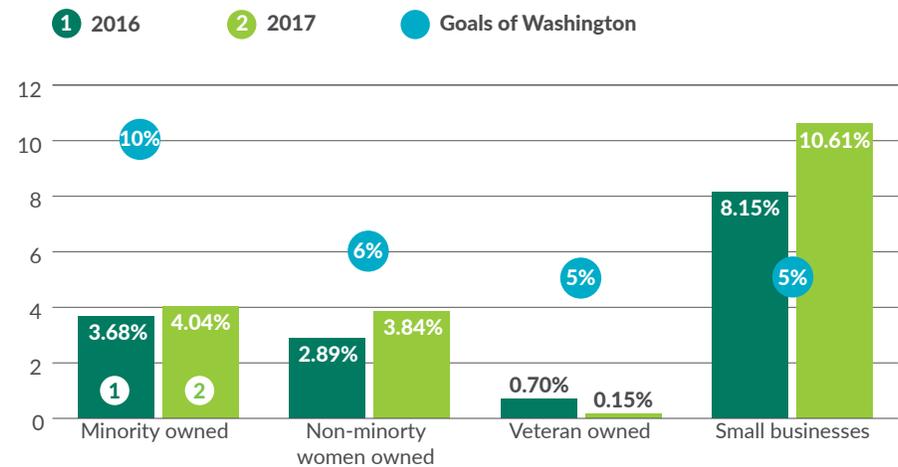
WSDOT was unable to meet the overall Federal Highway Administration (FHWA) Disadvantaged Business Enterprise (DBE) goal during the first half of federal fiscal year 2018 (October 2017 through March 2018).

The current overall goal for FHWA DBE is 19.0%; WSDOT was unable to meet that goal in the first half of FFY2018. As shown in the graph at below left, WSDOT's awards and commitments were 9.3% in the first half of FFY2018, a decrease of 2.8 percentage points from the 12.1% achieved for all of FFY2017. The agency's utilization of completed contracts was 9.5% in the first half of FFY2018, a decrease of 4.3 percentage points below the 13.8% achieved in FFY2017.

WSDOT is not meeting the overall DBE goal primarily due to the impact of a "white women owned business" waiver that was instituted in June 2017. This waiver excludes white women owned DBEs that contract with WSDOT from counting toward project goal credit. The waiver was requested by WSDOT as result of a 2012 DBE Program Disparity Study, and took effect in June 2017. That study showed that for FHWA, there was no way of looking at the data to tell which white woman

WSDOT makes progress on three of four diverse business goals

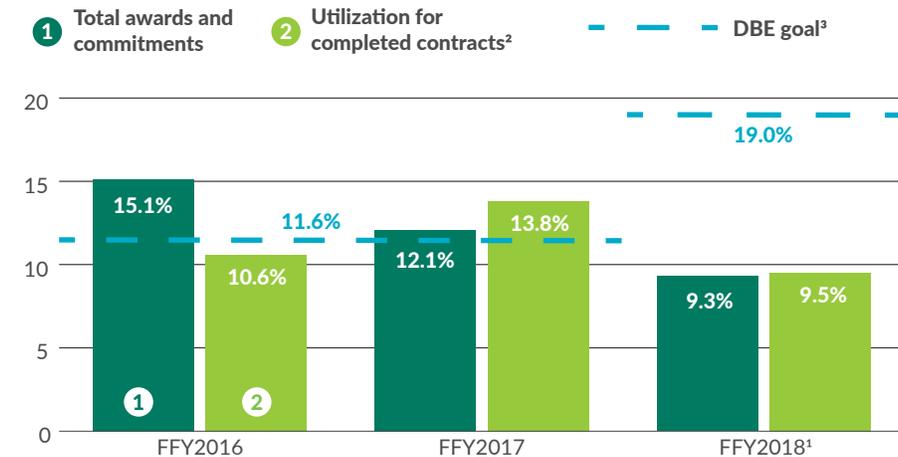
Voluntary goals; Comparing state fiscal year (FY) 2016¹ to FY2017²



Data source: Office of Minority and Women's Business Enterprises State Supplier Diversity Reporting.
Notes: 1 July 1, 2015 through June 30, 2016. 2 July 1, 2016 through June 30, 2017.

WSDOT FHWA Disadvantaged Business Enterprise program unable to meet goal in the first half of FFY2018

Comparing first halves of federal fiscal years (FFY) 2016 through FFY2018



Data source: WSDOT Office of Equal Opportunity.
Notes: 1 FFY2018 refers to the first half of FFY2018 (October 2017 through March 2018)
2 Utilization for completed contracts refers to those completed within the stated time.
3 The DBE goal changed from 11.6% in FFY2016 and FFY2017 to 19% in FFY2018. This change was based on 2017 DBE Program disparity study findings.

owned businesses were facing a disparate impact. In December 2016, USDOT granted the waiver. WSDOT has since completed a 2017 DBE Program Disparity Study and has requested the waiver be repealed. WSDOT is waiting for USDOT to take action on the repeal request. For more information on how DBE goals are set, see [Gray Notebook 53, p. 27](#).

WSDOT construction and consulting projects with federal aid require contractors to solicit business from disadvantaged businesses. The agency's Office of Equal Opportunity sets project goals that become part of the contract. Projects that receive federal funds have an enforceable DBE goal while all other projects have voluntary goals which WSDOT encourages contractors to meet.

WSDOT emphasizes inclusion in its employee engagement survey

WSDOT recognizes the importance of inclusion in its workforce and continues to foster a work environment where employees feel welcome and safe to bring their true selves. WSDOT leaders feel that building a diverse and inclusive workplace helps drive innovation by creating an environment where "outside the box" ideas are heard—which will help employees do their best work for the people of Washington.

In the 2017 Washington State Employee Engagement Survey, most WSDOT employees felt that they have the opportunity to give input on decisions affecting their work. Sixty-three percent of staff responded positively—selecting "usually" or "almost always or always" as their

response to the statement. The agency's goal is to increase these results by 3% by 2021.

In the same survey, the majority of employees agreed that the agency consistently demonstrates support for a diverse workforce. Seventy-four percent of staff responded positively; their positive response to this statement has consistently been 70% or more for in the last five years. WSDOT's goal is to increase the positive response rate by 1% by 2021. Both questions are intended to obtain employees' perspective on diversity and inclusion in their agency.

As WSDOT continues to build a work environment that is respectful, supportive and inclusive, the agency is assessing ways to integrate diversity and inclusion into development and leadership training. WSDOT is working with OFM to add WSDOT-specific items into the 2018 Washington State Employee Engagement Survey.

Community engagement training reaches 218 employees

Community Engagement is a strategy of WSDOT's Inclusion goal. WSDOT's community engagement trainers have been busy training project managers and other WSDOT staff. As of April 2018, 175 staff have completed the agency's full community engagement training, and 43 employees have been trained to deliver the training, for a total of 218 employees trained. The training is intended to enhance WSDOT's efforts to engage traditional and underrepresented stakeholders in decision making.

A 2016 supplemental state budget appropriation included funding for

WSDOT to train "project managers" in community engagement. To maximize limited funds, WSDOT not only developed a training program and curriculum, but also hosted a "train-the-trainer" class. The agency also developed an e-learning course for those who can't attend in-person training. The e-learning course has two modules that focus on the keys to successful engagement.

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Strategic Plan Goal INCLUSION

To foster a more inclusive environment within the agency and its interactions with the public, WSDOT is:

- Advancing workforce diversity and inclusion
- Enhancing diverse business opportunities through such innovations as a mentor-protégé program and construction trades apprenticeships
- Striving to meet WSDOT's federal and state diverse business goals
- Developing and maintaining relationships with traditional and underrepresented stakeholders and engaging those stakeholders in decision making

Notable results

- *WSDOT completed one Connecting Washington project in the fourth quarter of the 2017-2019 biennium*
 - *WSDOT removed 36 projects from its Watch List during the fourth quarter of the 2017-2019 biennium; one remains*
 - *WSDOT advertised 42 of 64 Pre-existing Funds projects during the fourth quarter of the 2017-2019 biennium*
-

WSDOT completes one Connecting Washington contract

WSDOT completed one highway program Connecting Washington (CW) funded project at SR 20 and Sharpes Corner in the fourth quarter of the 2017-2019 biennium (April through June 2018). The agency has completed 11 highway program CW projects, including studies, totaling \$43 million since the funding package was passed in 2015. These individual projects may represent only a portion of their respective legislative budget line items.

WSDOT did not complete any additional Nickel or Transportation Partnership Account (TPA) projects or contracts during the quarter. WSDOT has completed 380 total Nickel and TPA construction projects since July 2003, with 87% on time and 91% on budget. The agency currently has six Nickel and TPA projects underway (see p. 41 for additional information).

The cost at completion for the 380 Nickel and TPA construction projects is \$9.41 billion, 1.5% less than the baseline cost of \$9.69 billion. As of June 30, 2018, WSDOT had 19 Nickel and TPA projects yet to be completed, with a total value of approximately \$5.92 billion.

Nickel, Transportation Partnership Account funding continue to be lower than original projections

Fuel tax collections show 2003 and 2005 revenue forecasts, which were used to determine project lists, did not anticipate the economic recession in projecting future growth in fuel tax revenues. The 2003 Nickel and 2005 TPA gas taxes that fund projects are based on a fixed tax rate per gallon and do not change with the price of fuel. As such, reduced gasoline and diesel consumption and sales lead to reduced tax revenue.

Fuel tax funding from the 2005 TPA package has been lower than the original March 2005 projection. The original projection for the TPA account was \$4.9 billion over a 16-year period from 2005 through 2021. Current TPA projections through 2021 are estimated to be \$4.0 billion, roughly \$900 million (18.2%) less than the original 2005 projection.

The 2003 Nickel transportation package was originally a 10-year plan, with revenues forecasted to total \$1.9 billion from 2003 through 2013. Fuel tax revenues collected during this period were 10.2% lower than the original March 2003 projection.

Nickel and TPA gas tax revenues are used to pay the debt on the bonds sold to finance planned projects. Once all the bonds are sold, revenues collected will be used to pay the debt.

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CURRENT LEGISLATIVE EVALUATION & ACCOUNTABILITY PROGRAM QUARTERLY UPDATE

Combined Nickel & Transportation Partnership Account Status of projects to date; 2003 through June 30, 2018; Dollars in millions	Number of Projects	Value of Program¹
Subtotal of completed construction projects ²	380	\$9,689.8
<i>Non-construction projects that have been completed or otherwise removed from Nickel/TPA lists^{3,4}</i>	5	\$74.4
Projects included in the current transportation budget but not yet complete	19	\$5,916.0
<i>Projects that have been deferred indefinitely or deleted and removed from Nickel/TPA lists^{3,4}</i>	13	\$499.2
<i>Projects now funded by Connecting Washington and removed from Nickel/TPA lists (see GNB 63, p. 35)</i>	4	\$101.7
Total number of projects ⁵ in improvement and preservation budget	421	\$16,281.2
Schedule and budget summary Nickel & TPA combined: Results of completed construction projects in the current Legislative Transportation Budget and prior budgets; Dollars in millions	Completed in 2017- 2019 Biennium Budget	Cumulative Program
Total number of projects completed	3	380
<i>Percent completed early or on time</i>	33%	87%
<i>Percent completed under or on budget</i>	67%	91%
Baseline cost at completion	\$2,713.0	\$9,689.8
Current cost at completion	\$2,714.6	\$9,541.2
Percent of total program over or under budget	0.1% over	1.5% under
Advertisement record: Results of projects entering the construction phase or under construction	Combined Nickel & TPA	
Total current number of projects in construction phase as of June 30, 2018	6	
<i>Percent advertised early or on time</i>	100%	
Total number of projects advertised for construction during the 2017-2019 biennium (July 1, 2017, through June 30, 2019)	0	
<i>Percent advertised early or on time</i>	N/A	
Projects to be advertised: Results of projects now being advertised for construction or planned to be advertised	Combined Nickel & TPA	
Total number of projects being advertised for construction (July 1 through December 31, 2018)	0	
Percent on target for advertisement on schedule or early	N/A	
Budget status for the 2017-2019 biennium; Dollars in millions	WSDOT biennial budget	
Budget amount for 2017-2019 biennium	\$1,036.6	
Actual expenditures in 2017-2019 biennium to date (July 1, 2017, through June 30, 2018)	\$354.6	
<i>Total 2003 Transportation Funding Package (Nickel) expenditures</i>	\$68.5	
<i>Total 2005 Transportation Partnership Account expenditures</i>	\$247.2	
<i>Total Pre-existing Funds expenditures⁶</i>	\$38.9	

Data source: WSDOT Capital Program Development and Management.

Notes: Numbers have been rounded. This chart was updated in GNB 63 to reflect reconciled Nickel and TPA project counts, and as a result it does not exactly match Current Legislative Evaluation and Accountability Program charts from editions prior to GNB 63. **1** Dollars in millions. **2** Cumulative projects completed from July 1, 2003, to March 31, 2018. **3** Non-construction projects include commitments for engineering and right of way work. **4** Projects that have been deferred indefinitely or deleted include projects that have no funding available, projects that have been halted by the Legislature and those for which other entities (e.g., cities and counties) are now serving as the lead agency. **5** The project total has been updated to show "unbundled" projects which may have been previously reported in programmatic construction groupings (such as Roadside Safety Improvements or Bridge Seismic Retrofit). See [Gray Notebook 38, p. 55](#) for more details. **6** For more information on the Pre-existing Funds program, see [pp. 52-54](#)

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COMPLETED PROJECTS & CONTRACTS QUARTERLY UPDATE

Measuring operationally complete projects

Projects and contracts are “on time” if they are operationally complete within the quarter planned in the last approved schedule, and “on budget” if costs are within 5% of the last approved budget.

Delivery performance of completed projects and contracts is measured against the last approved schedules and budgets in accordance with criteria established by the Legislature. In addition to the last approved budgets and schedules for these projects and contracts, initial budgets and schedules are included to show changes that may have occurred during design and construction phases.

For information on previously completed Nickel, Transportation Partnership Program and Connecting Washington projects, visit www.wsdot.wa.gov/projects/completed.

WSDOT reports one completed project during the quarter

WSDOT completed one Connecting Washington (CW) project in the fourth quarter of the 2017-2019 biennium (April through June 2018).

SR 20/Sharpes Corner Vicinity - Improvements (CW)

SKAGIT COUNTY

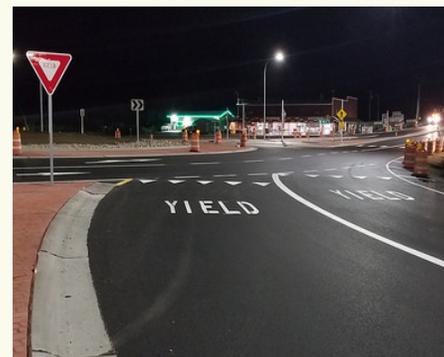
This project is designed to reduce the potential for collisions, reduce congestion and improve freight movement at the intersections of SR 20/SR 20 Spur (Sharpes Corner), SR2/Fidalgo Bay Rd. and SR 20/Miller-Gibraltar Rd.

Project benefits: The new roundabouts in the Sharpes Corner area were designed to improve access to the cities of Oak Harbor, Whidbey Island and Anacortes by reducing congestion levels along with reducing the potential for collisions. The project also addressed environmental concerns by improving stormwater culverts and detention ponds to meet WSDOT's current standards.

Budget performance: This contract was operationally complete for \$13.4 million, on budget with respect to the initial and last approved budget.

Schedule performance: This project was operationally complete in June 2018, early with respect to the current Legislative schedule.

Highlights/Challenges: Proactive community outreach efforts resulted in the inclusion of a bike and pedestrian trail in the intersection improvements. This trail connects US Bike Route 10 in Skagit County with Bike Route 3 on Whidbey Island. WSDOT also decided to coordinate the multiple roundabouts and consolidate the construction schedules based on local feedback.



The photos above show the before and after, respectively of the Sharpes Corner intersection.

70 WATCH LIST QUARTERLY UPDATE

One project remaining on Watch List

WSDOT added 22 projects with Watch List issues to its existing one project on the Watch List and removed 22 this quarter (April 2018 through June 2018), leaving one project on the Watch List as of June 30. Watch List issues are significant changes or uncertainties in scope, schedule or budget. Projects may have more than one issue.

WSDOT maintains the Watch List to deliver on the agency's commitment to "No Surprises" reporting. WSDOT continuously monitors its projects' performance to ensure issues affecting schedule and/or budget are brought to the attention of legislators, executives and the public. The Watch List provides information on issues that have the potential to impact schedules or budgets of projects funded by Pre-existing Funds (PEF), Nickel, Transportation Partnership Account (TPA), and Connecting Washington Program (CW) revenue packages.

The Watch List helps track projects that have or may have issues and keep them in the spotlight so that they receive the necessary attention to resolve these issues. Projects are added and removed by WSDOT's Capital Program Development & Management Office. Projects are removed from the Watch List when the project has been completed or the issue has been resolved and the change has been approved by WSDOT.

Watch List information:

A complete list of Watch List projects and full descriptions can be found using the following link, reported by month: <http://bit.ly/ProjectDeliveryReports>.

Project (County)	Funding	Date added	Date removed	Phase	Watch List issue ¹
Projects remaining on the Watch List					
SR 150/No-See-Um Rd. - Intersection Improvements and Realignment (Chelan)	CW	Mar-2017	--	--	This project will construct a roundabout at the intersection of SR 150 and No See-Um Road on the north shore of Lake Chelan. The current cost estimate increased by \$1.2 million to \$7.7 million. Currently, there are two budget risks (right of way and construction) that are being managed by WSDOT on this project. This project has one outstanding right of way acquisition that is currently in condemnation with the Attorney General's Office. In addition, there are contractor claims that are in negotiations.
Projects no longer on the Watch List					
SR 524/Locust and Larch Way - Intersection Improvements (Snohomish)	PEF	Apr-2018	Apr-2018	Construction	The total cost estimate has increased by \$725,000.
SR 527/Penny Creek - Fish Passage (Snohomish)	PEF	Apr-2018	Apr-2018	Design	The project has been delayed by one construction season.
SR 542/I-5 to Britton Rd. - Paving (Whatcom)	PEF	Apr-2018	Apr-2018	Design	The project has been delayed by one construction season and the project cost estimate has increased by \$587,000.
SR 542/I-5 to Hannegan Rd. Vicinity - ADA Compliance (Whatcom)	PEF	Apr-2018	Apr-2018	Design	The project has been delayed by one construction season.

Data sources: WSDOT Capital Program Development and Management and WSDOT regions.

Project (County)	Funding	Date added	Date removed	Phase	Watch List issue ¹
Projects no longer on the Watch List					
SR 542/Dewey Rd. Vicinity - Culvert Replacement (Whatcom)	PEF	Apr-2018	Apr-2018	Design	The project has been delayed by one construction season.
SR 109/Grass Creek Bridge - Special Repair (Grays Harbor)	PEF	Apr-2018	Apr-2018	Design	The project has been delayed by one construction season.
I-90/Fishtrap to Latah Creek - Illumination Retrofit (Adams, Lincoln, Spokane)	PEF	Apr-2018	Apr-2018	Design	The project has been delayed by three construction seasons.
SR 261/McElroy Coulee Crossing - Replace Drainage Structure (Adams)	PEF	Apr-2018	Apr-2018	Design	The project has been delayed by one construction season.
I-5/Southbound South Lucile St. to Spring St. - Pavement Repair (King)	Nickel	Apr-2018	Apr-2018	Construction	This project was previously reported. Update to the February 2018 report: The cost estimate has further increased by \$2.6 million.
I-90/Ryegrass Eastbound/Westbound Safety Rest Area - Major Rehabilitation - South Central Region (Kittitas)	PEF	May-2018	May-2018	Design	This project has been delayed by four years and the estimated cost has increased.
SR 7/SR 507 to South of South 38th St. - Paving (Pierce)	PEF	May-2018	May-2018	Design	The advertisement date has been delayed by two construction seasons and the estimated cost has increased by \$2.4 million.
SR 101/Chehalis River Bridge - Scour Repair (Grays Harbor)	PEF	May-2018	May-2018	Design	The project has been delayed by one construction season.
SR 106/McReavy Rd. Vicinity - Culvert Repair (Mason)	PEF	May-2018	May-2018	Design	The advertisement date has been delayed by two construction seasons.
SR 241/Mabton Vicinity - Retrofit Bridges (Yakima)	CW	May-2018	May-2018	Design	The advertisement date has been delayed by one year to winter 2020 and project completion by two years to fall 2021.
SR 99/Roy St. to North 60th St. - Paving (King) and SR 99/North 60th St. to North 145th St. - Paving (King)	PEF	May-2018	May-2018	Construction	This project was previously reported. Update to the March 2018 report: The project cost estimate has further increased by \$3.4 million.
SR 524/Yew Way - Railroad Crossing Improvements (Snohomish)	PEF	May-2018	May-2018	Design	This project was previously reported. Update to the July 2017 report: The advertisement and construction completion were further delayed by one year.
I-5/Marine View Dr. to SR 528 - Peak Use Shoulder Lane and Interchange Improvements (Snohomish)	CW	Jun-2018	Jun-2018	Design	The Request for Proposal (RFP) date has been delayed by one year.
SR 9/SR 204 Intersection - Improvements (Snohomish)	CW	Jun-2018	Jun-2018	Design	The construction duration has been extended to two years, which has delayed the operationally complete date by one year.
SR 20/Fish Creek and Lorenzan Creek - Fish Passage (Skagit)	PEF	Jun-2018	Jun-2018	Design	The project's estimated cost has increased by \$2.8 million.
SR 520/148th Ave. Northeast Interchange - Overlake Access Ramp (King)	CW	Jun-2018	Jun-2018	Design	The advertisement and construction dates have been delayed and the estimated cost has increased.
US 2/West of Leavenworth - Slope Stabilization (Chelan)	PEF	Jun-2018	Jun-2018	Design	The advertisement and operationally complete dates have been delayed by two years.
US 101/Lower Hoh Rd. - Intersection Improvements (Jefferson)	PEF	Jun-2018	Jun-2018	Design	The advertisement date has been delayed one construction season.

Data sources: WSDOT Capital Program Development and Management and WSDOT regions.

Note: **1** Projects are removed from the Watch List when they have been reported and/or the issue has been resolved by WSDOT.

70 ADVERTISEMENT RECORD QUARTERLY UPDATE

Connecting Washington Account projects in construction ¹ Through June 30, 2018; County in parentheses; Dollars in millions	Schedule status	Completion date	Total project cost
US 195/Colfax to Spangle - Add Passing Lanes (Whitman & Spokane)			
US 195/Colfax to Spangle - Add Passing Lanes - Phase 2	On schedule	Nov-2018	\$5.5
I-5/Rebuild Chamber Way Interchange Improvements (Lewis)			
I-5/Chamber Way Bridge - Emergency Repair & Replacement	On schedule	Oct-2018	\$15.6
I-5/Joint Base Lewis-McChord Corridor Improvements (Pierce)			
I-5/Mounts Rd. to Center Dr. - Auxiliary Lane Extension (Pierce)	Delayed	Aug-2018	\$11.2
I-5/Steilacoom-Dupont Rd. to Thorne Ln. - Corridor Improvements	On schedule	Apr-2021	\$332.5
SR 518/Des Moines Interchange Improvements (King)			
SR 518/Des Moines Memorial Dr. - Interchange Improvements	On schedule	Oct-2018	\$13.5
SR 167/SR 509 Puget Sound Gateway (King)			
SR 509/28th/24th Ave. South - City of SeaTac Lead	Delayed	Aug-2018	\$3.6
I-405/Renton to Bellevue - Corridor Widening (King)			
I-405/SR 167 Interchange - Direct Connector (Stage 1)	On schedule	Dec-2018	\$168.5
I-405/SR 167 Interchange Catch Basins - Drainage Repair	On schedule	Nov-2018	\$1.8
I-5/116th St. and 88th St. Interchanges - Improvements (Snohomish)			
I-5/116th St. Northeast Interchange - Tulalip Tribes Lead	Advanced	Dec-2018	\$16.9
Land Mobile Radio Upgrade			
Wireless Communication	On schedule	May-2019	\$12.0
US 12/Wildcat Bridge Replacement (Yakima)			
US 12/Wildcat Creek Bridge - Replace Bridge	Advanced	Dec-2018	\$12.0
SR 520 Seattle Corridor Improvements - West End (King)			
SR 520/Montlake to Lake Washington - Interchange and Bridge Replacement	Delayed	Apr-2023	\$586.8
US 395 North Spokane Corridor (Spokane)			
US 395/North Spokane Corridor - Columbia to Freya	Advanced	Oct-2018	\$20.0
US 101 Lynch Rd. Intersection (Mason)			
US 101/Lynch Road - Safety Improvements	Late	Oct-2019	\$5.0

Data source: WSDOT Capital Program Development and Management.

Note: **1** Connecting Washington advertisements show projects currently in construction during the quarter, and does not represent a comprehensive list of completed Connecting Washington projects.

Nickel & TPA projects in construction Through June 30, 2018; County in parentheses; Dollars in millions	Fund type	Advertised on time	Ad date	Operationally complete date	Award amount
I-5 Concrete Rehabilitation Program (King)					
I-5/Northbound South 260th to Duwamish River Bridge - Concrete Rehab	Nickel	N/A	Nov-2016	Oct-2018	\$30.8
I-5/Northbound Boeing Access Rd. to Northeast Ravenna Bridge - Pavement Repair	Nickel	N/A	Dec-2016	Sep-2019	\$38.6
Work associated with the I-5/Northbound South Spokane St. Vicinity - Concrete Pavement Replacement, and I-5/Northbound I-90 Vicinity to James St. Vicinity - Concrete Pavement Replacement is included in I-5/Northbound Boeing Access Rd. to Northeast Ravenna Bridge - Pavement Repair.					
SR 99 Alaskan Way Viaduct Replacement (King)					
SR 99/South King Street Vicinity to Roy Street - Viaduct Replacement	Nickel/TPA	√	May-2010	To be determined	\$1,089.7
The schedule for this project changes frequently and WSDOT cannot verify the contractor's schedule at this time.					
US 395/North Spokane Corridor (NSC) - Design and Right of Way - New Alignment (Spokane)					
US 395/NSC Freya St. - Structures	TPA	N/A	Dec-2016	Nov-2018	\$7.6
I-5/Tacoma HOV Improvements (Pierce)					
I-5/SR 16 Interchange - Construct HOV Connections	TPA	√	Feb-2016	Oct-2019	\$121.6
I-5/Portland Ave to Port of Tacoma Rd. - Northbound HOV	TPA	Late	Sep-2014	Jul-2018	\$152.6
I-5/M Street to Portland Avenue - Add HOV Lanes	Nickel	√	Mar-2014	Aug-2018	\$99.9
I-90/Snoqualmie Pass East - Hyak to Keechelus Dam - Corridor Improvement (Kittitas)					
I-90/Snowshed to Keechelus Dam to Stampede Pass - Add Lanes/Build Wildfire Bridges	TPA	Late	Feb-2015	Oct-2018	\$72.8
I-90/Snowshed to Keechelus Dam Phase 1C - Replace Snowshed and Add Lanes Advertisement was delayed to address fire and safety issues with the original snowshed design, resulting in long-term savings.	TPA	Late	Apr-2011	Oct-2018	\$177.1
I-90/Concrete Rehabilitation¹ (multiple counties)					
Nickel					

Data source: WSDOT Capital Program Development and Management.

Note: **1** The next I-90 concrete rehabilitation contract is scheduled to be advertised in 2019, but no contracts are currently under construction. It is listed here because it is an ongoing Nickel project.

70 SCHEDULE & BUDGET SUMMARIES QUARTERLY UPDATE

Biennial summary of Nickel and Transportation Partnership Account projects

Costs estimated at completion; Dollars in millions

Cumulative to date	Fund type	Advertised on time ¹	Completed on time	Within scope	Baseline cost	Current cost	Completed on budget ²
2017-2019 biennium summary <i>This information is updated quarterly during the biennium</i>	0 Nickel 3 TPA	1 on time 2 late	1 on time 2 late	1	\$2,713.0	\$2,714.6	1 on budget 2 over budget
2015-2017 biennium summary	0 Nickel 11 TPA	7 on time 4 late	10 on time 1 late	11	\$809.9	\$777.7	10 on budget 1 over budget
2013-2015 biennium summary	6 Nickel 15 TPA	16 on time 5 late	15 on time 6 late	21	\$555.7	\$514.0	18 on budget 3 over budget
2011-2013 biennium summary	5 Nickel 36 TPA	31 on time 10 late	32 on time 9 late	41	\$1,485.5	\$1,459.6	37 on budget 4 over budget
2009-2011 biennium summary	16 Nickel 74 TPA	73 on time 17 late	80 on time 10 late	90	\$1,641.6	\$1,597.0	85 on budget 5 over budget
2007-2009 biennium summary	42 Nickel 69 TPA	91 on time 20 late	96 on time 15 late	111	\$1,685.7	\$1,685.2	102 on budget 9 over budget
2005-2007 biennium summary	52 Nickel 24 TPA	71 on time 5 late	68 on time 8 late	76	\$673.9	\$668.8	67 on budget 9 over budget
2003-2005 biennium summary	27 Nickel	25 on time 2 late	27 on time 0 late	27	\$124.6	\$124.4	25 on budget 2 over budget

Data source: WSDOT Capital Program Development and Management.

Notes: Dollar amounts are rounded up. 1 Projects are "on time" if they are operationally complete within the quarter planned in the last approved schedule. 2 Projects are "on budget" if the costs are within 5% of the last approved budget.

WSDOT reports three change orders of \$500,000 or more during the quarter

During the quarter ending June 30, 2018, WSDOT approved three change orders of \$500,000 or more. There was a total of approximately \$1.32 million in increases and a savings for WSDOT of about \$1.02 million due to a contract reduction. The first change order, valued at about \$761,000, covered costs associated with added work on the 468th Avenue Southeast to West Summit Road project because the bridge deck required removal of extra surface. The second change order, valued at approximately \$561,000, involved additional costs due to inadequately represented work on the guide rollers and the added installation of shims on the Hood Canal Bridge Gear Box Special Repair project. The last change order, a contract reduction resulting in savings of about \$1.02 million for WSDOT, was for modifications to a work order on the SR 520 West Approach Bridge project for Stage 4A to Stage 4B. These changes included shifting of a temporary mainline SR 520 alignment to the north, salvaging a portion of the existing eastbound SR 520 roadway that was to be removed and replaced, salvaging portions of existing barriers, leaving in place drainage work that was to be removed and replaced, and reducing temporary traffic control as a result of the deleted items.

After an extensive review—which can involve subject matter experts, contract specialists and other outside stakeholders—WSDOT sometimes changes its engineers' original plans and specifications in order to complete projects. When this occurs, WSDOT issues a formal modification (or change order) to the contract containing a description of the change and details about how or if the contractor may be compensated for it. Each month, WSDOT posts all change orders estimated to cost \$500,000 or more online at <http://bit.ly/WSDOTchangeorders>.

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PRE-EXISTING FUNDS QUARTERLY UPDATE

Current cost to complete project advertisements for quarter \$27.8 million over original value

2017-2019 biennium (July 2017 through June 2019); Quarter ending June 30, 2018; Dollars in millions

	Number of projects	Original value	Current cost to complete
Total PEF advertisements planned for the 2017-2019 biennium	532	\$1,060.8	\$1,167.9
Actual advertisements June 30, 2018	233	\$464.2	\$492.0

Data source: WSDOT Capital Program Development and Management.

WSDOT advertises 233 PEF projects during the 2017-2019 biennium

Project status	Quarter ¹	Cumulative ²
Projects advanced ³	2	9
Projects advertised on time	21	172
Emergent projects advertised	4	15
Projects advertised late	15	37
Total projects advertised	42	233
Projects advertised early ⁴	3	7
Projects delayed within the biennium	14	87
Projects deferred out of the biennium	3	12
Projects deleted	2	2

Data source: WSDOT Capital Program Development and Management.

Notes: **1** Quarter refers to April through June 2018. **2** Cumulative refers to July 2017 through June 2019. **3** Advanced includes projects that were moved up from future quarters. **4** Early includes projects from the quarter that were advertised in a previous quarter.

WSDOT advertises 233 Pre-existing Funds projects during the 2017-2019 biennium

WSDOT advertised 42 of 64 planned Pre-existing Funds (PEF) projects in the fourth quarter of the 2017-2019 biennium (April through June 2018). Of these 64 projects to be advertised this quarter, two were advanced from future quarters, 21 were on time, four were emergent, 15 were late, three were advertised in a previous quarter, 14 were delayed within the biennium, three projects were deferred out of the biennium, and two were deleted. See pp. 53-54 for this quarter's PEF advertisements.

To date in the 2017-2019 biennium (July 2017 through June 2019), WSDOT's current cost to complete all 233 PEF projects that have been advertised is \$492.0 million, about \$27.8 million (6.0%) more than the original value of \$464.2 million. See charts at right for additional information.

Combined improvement and preservation cash flows come in slightly lower than original projections

WSDOT originally planned to have \$421.5 million in the cumulative combined improvement and preservation cash flow at the end of the fourth quarter of the 2017-2019 biennium, but had \$394.3 million instead (approximately 6.4% less). WSDOT expects to increase planned expenditures in future quarters which will meet the original biennial expenditure plan.

At the end of a biennium, funds not spent on active projects are reappropriated to the ensuing biennium, creating an expenditure plan that exceeds the current allotment plan. The allotment plan is then adjusted when the first supplemental budget is approved. As an additional strategy, WSDOT may also over-program how many preservation projects are planned for a biennium to help ensure it uses all of its federal obligation authority.

Cumulative Pre-existing Funds improvement and preservation combined cash flows slightly lower than planned during the 2017-2019 biennium

Quarter ending June 30, 2018; Planned vs. actual expenditures; Dollars in millions



Data source: WSDOT Capital Program Development and Management.

Note: Q4 refers to the fourth quarter (April through June 2018) of the 2017-2019 biennium, which runs from July 2017 through June 2019.

WSDOT advertises 42 Pre-existing Funds projects during the fourth quarter

April through June 2018

Advanced (2)	
Olympic Region - Regionwide Curve Warning Signing - Chevron Alignment 4	SR 290/Hamilton St. to Mission Ave. ADA - Pedestrian Ramp Retrofit
On time (21)	
SR 26/Railroad Bridge - Deck Repair	SR 17/US 395 to 0.15 North of Mesa - Shoulder Rumble Strips
US 97/Brays Landing Rd. - Intersection Improvements	I-90/United States Forest Service Rd. 9030 Interchange - Replace Lighting System
Southwest Region - Regionwide Safety - Shoulder Rumble Strips 2017-2019	US 2/Eastern Region Illumination Rehabilitation Phase 2 - Retrofit Luminaires
SR 6/Chehalis River Adna Bridge - Replace Expansion Joints	SR 20/Calispel Lake Drainage - Culvert Replacement
SR 14/Cliffs Rd. Vicinity to Wood Creek Bridge - Pavement Rehabilitation	SR 26/Illumination Rehabilitation Phase 2 - Retrofit Luminaires
US 101/SR 101 Alternate Intersection Vicinity to Raymond - Centerline Rumble Strips	SR 31/South of Metaline - Stabilize Slope
US 101/D St. Vicinity to Water Street - Paving	I-90/Eastern Region Illumination Rehabilitation Phase 2 - Retrofit Luminaires
SR 500/Leadbetter Rd. to Southeast 3rd Ave - Paving	SR 278/West of Dunkle Rd. - Culvert Replacement
SR 503/Drainage Improvements	SR 290/Hamilton St. to Mission Ave. - Paving
SR 22 Benton and Yakima counties - Centerline Rumble Strips	US 395/Eastern Region Illumination Rehabilitation Phase 2 - Retrofit Luminaires
South Central Region - Regionwide Safety - Shoulder Rumble Strips 2017-2019	
Emergent (4)	
US 12/Mapleway Rd./McLaughlin Rd. - Intersection Safety Improvements	SR 290/I-90 Eastbound Off Ramp Retaining Wall - Repair
SR 903/Cle Elum to National Forest Boundary - Paving	SR 291/Eastern Region Illumination Rehabilitation Phase 2 - Retrofit Luminaires
Advertised late (15)	
I-5/Express Lanes System Entrances - Electronic Sign Replacement	US 101/Kennedy Creek Bridges - Special Repair
US 2/Nason Creek Rest Area - ADA Compliance	SR 410/Buckley - Rebuild Signals
US 2/Leavenworth Vicinity - ADA Compliance	I-5/Ridgefield Port of Entry - Scale House Reconstruction
SR 17/Prior Farms - Left Turn Lane	SR 14/0.5 Miles East of Cape Horn Slide Bridge - Debris Flow Fence
I-90/Winchester Rest Areas - ADA Compliance	SR 503/Brush Prairie Railroad Crossing - Bus and Truck Pullout Lanes
US 97/Okanogan River Bridge at Omak - Deck Repair	I-90/2nd Ave. West Bridge Westbound On-Ramp - Deck Repair
SR 285/Wenatchee Area - Paving	I-90/3rd Ave. Bridge Westbound On-Ramp - Deck Repair
SR 285/Wenatchee Area - ADA Compliance	
Advertised early (3)	
SR 503/Rock Creek Rd. to Williams Rd. Vicinity - Paving	SR 14/Chamberlain Sewer - Minor Rehabilitation - Southwest Region
SR 167/Milwaukee Ave. to Pierce County Line - Paving	

Data source: WSDOT Capital Program Development and Management.

WSDOT delays 14 Pre-existing Funds projects within the 2017-2019 biennium

April through June 2018

Projects delayed within the biennium (14)	
SR 104/Sunset Ave. - Railroad Crossing Improvements	US 101/Chehalis River Bridge - Scour Repair
Southwest Region - Regionwide Basic Safety - Guardrail 2017-2019	I-5/Interstate Bridge - Restore Load Shoe Clearances on Span 5
Southwest Region Breakaway Cable Terminal Replacement - Interstate	US 2/South Fork Skykomish River Bridge - Scour Repair
Southwest Region Breakaway Cable Terminal Replacement - Non-Interstates	SR 203/Eugene St. Vicinity to Carnation City Line - Paving (City Lead)
North Central Region - Centerline Rumble Strips/Section C	SW Region/Regionwide Curve Warning Sign Update 2017-2019
SR 7/North of Alder (Phase 2) - Rock Scaling	SR 21/Keller Ferry Terminal and Pontoon Replacement North and South
SR 7/North of Pilgrim Rd. East - Stabilize Slope	US 195/Thorpe Rd. - Intersection Improvements
Deferred (3)	
I-5/SR 506 to Rush Road Interchange - Illumination Rebuild	US 101/Elwha River Bridge - Bridge Replacement
I-5/Gee Creek Southbound Safety Rest Area - Rehabilitate Recreational Vehicle Dump Station	
Deleted (2)	
US 12/Snake River Clarkston Bridge - Mechanical Rehabilitation	SR 21/West Fork San Poil Bridge - Scour Repair

Data source: WSDOT Capital Program Development and Management.

PEF definitions

- **Advanced:** A project from a future quarter which is advertised in the current quarter.
- **Early:** A project with an advertisement date originally scheduled for the current quarter but has its advertisement occurred in an earlier quarter.
- **On time:** A project that is advertised within the quarter and planned in the biennial budget.
- **Late:** A project that is advertised in the current quarter but missed the original advertisement date.
- **Emergent:** A new project that addresses unexpected needs, such as emergency landslide repair.
- **Delayed:** A project that has not yet been advertised and has had the advertisement date moved out of the quarter being reported to another quarter within the biennium.
- **Deferred:** A project not yet advertised, which has had the advertisement date moved out of the quarter being reported to a future biennium.
- **Deleted:** A project that, upon review or due to changing priorities, is no longer required or has been addressed by another project.

